ENGINEERING NEWS-RECORD

★ THRUWAY TOLL-COLLECTION EQUIPMENT

★ AEC'S IDAHO REACTOR TEST STATION

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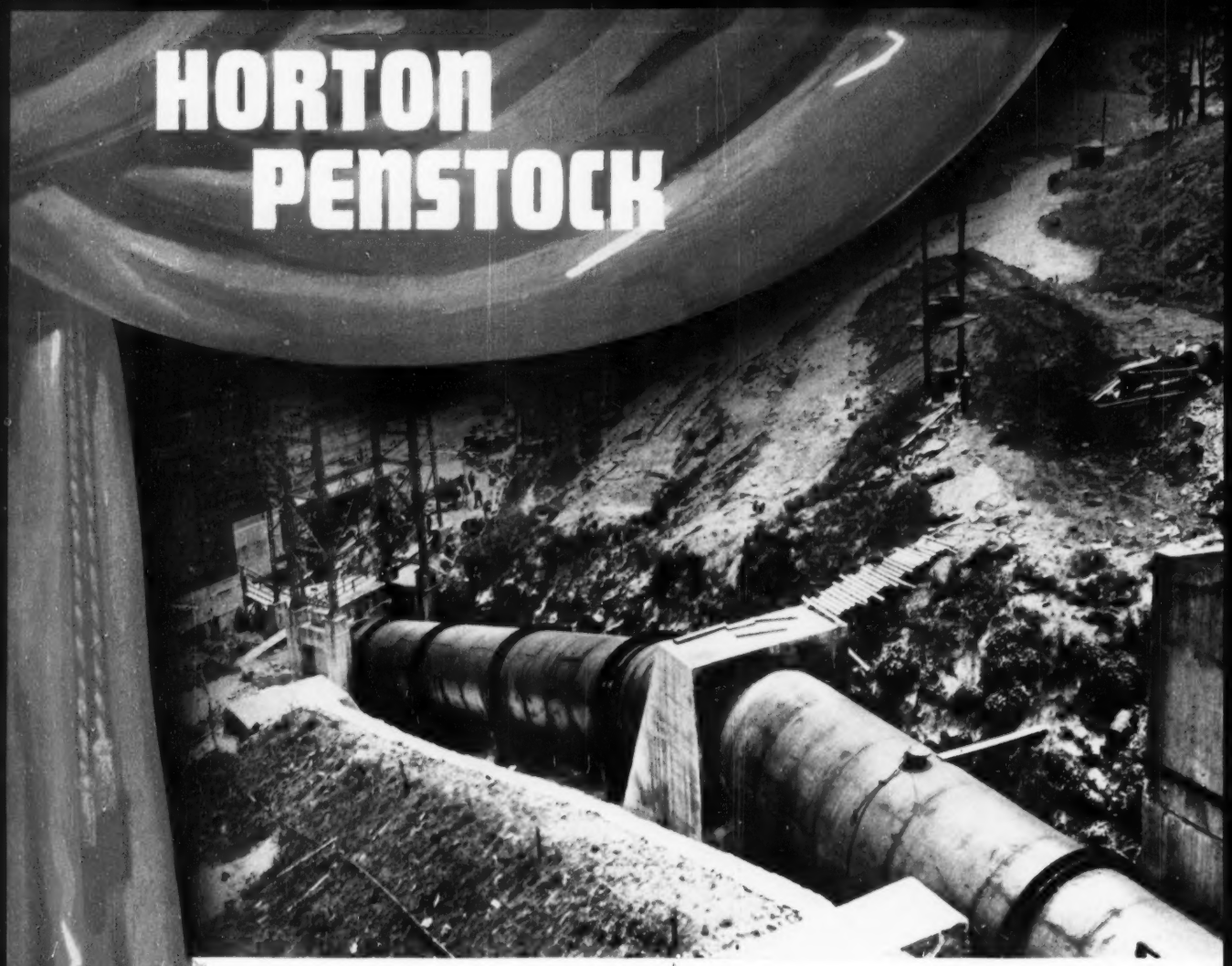

plays an IMPORTANT ROLE at Bartlett's Ferry

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One of many Horton penstocks in service throughout the world, the Bartlett's Ferry installation is typical of the heavy steel plate work Chicago Bridge & Iron Company is equipped to do. CB&I has complete facilities for building flat-bottom tanks, Hortonspheres, Hortonspheroids, elevated water tanks and special tanks, and installations from corrosion-resistant materials.

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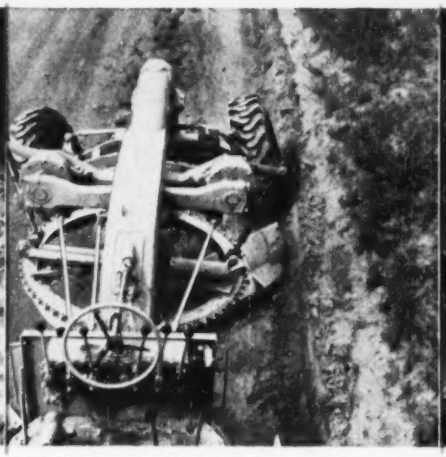
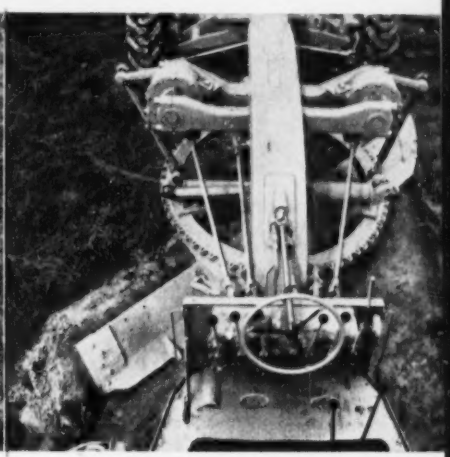


DITCHING — Look at the low control panel. It gives you a clear view of the blade . . . helps insure a clean, smooth ditch.



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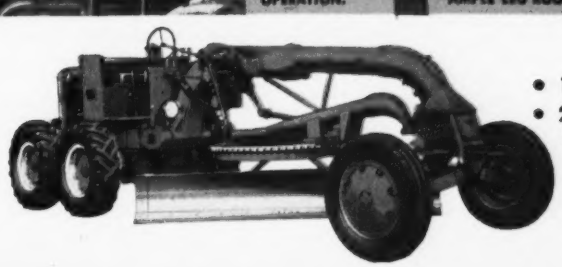

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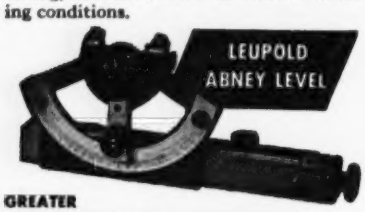

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Robert F. Boger
Publisher

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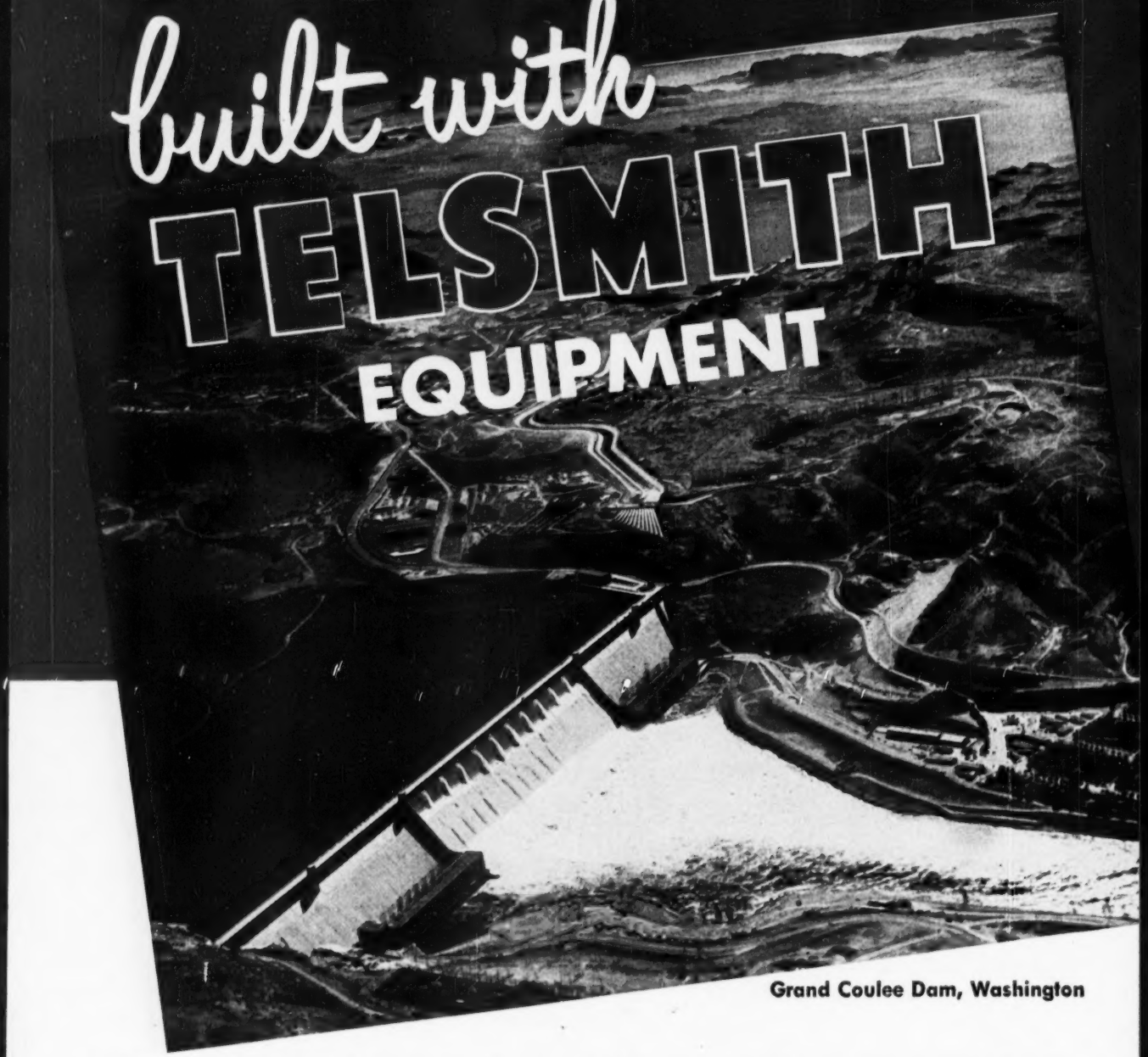

Grand Coulee Dam, Washington

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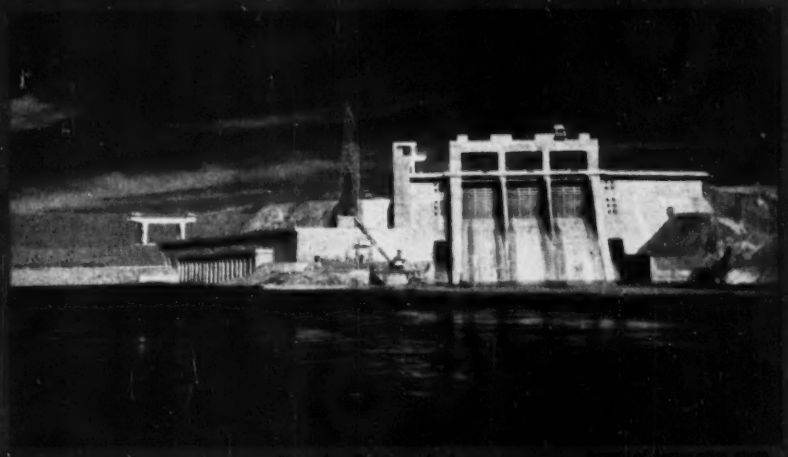
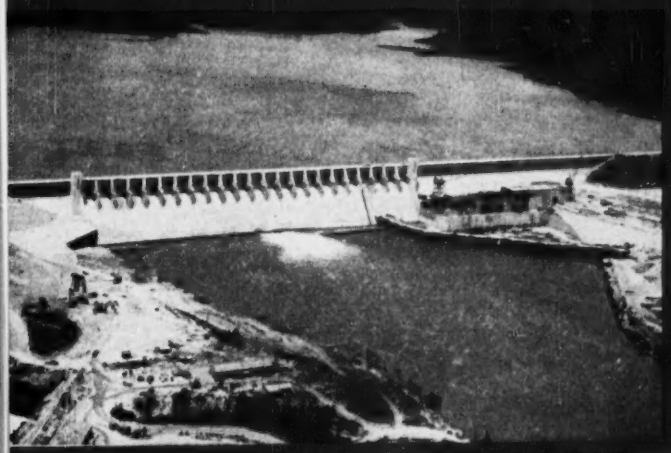
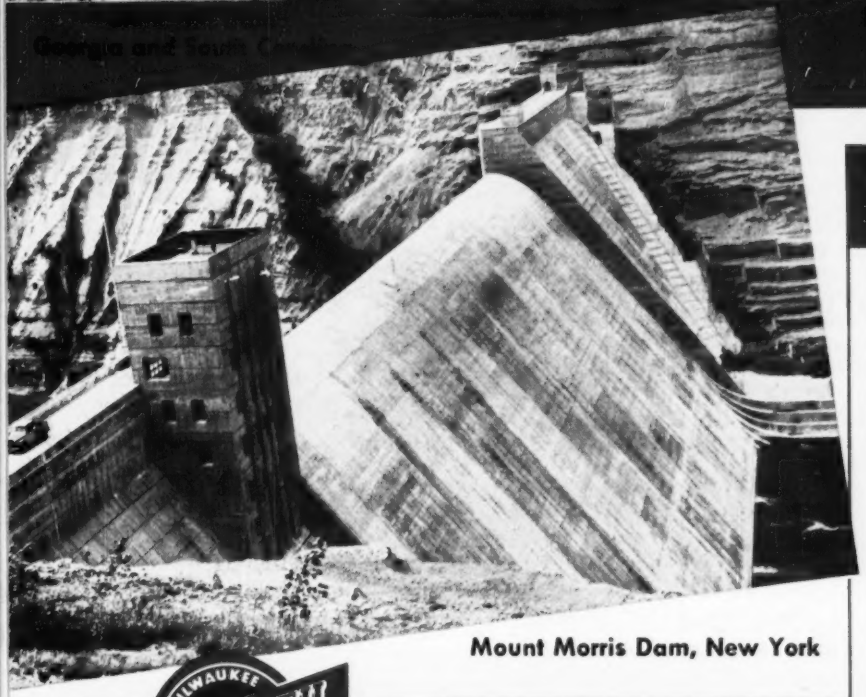


Davis Dam, Arizona





Mount Morris Dam, New York

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Send for Bulletin 266

MS-13

The Engineer's Report

CASE HISTORY

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FIRM *Young Truck Lines, Salt Lake City, Utah*

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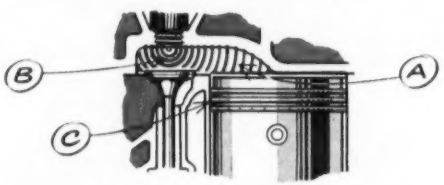

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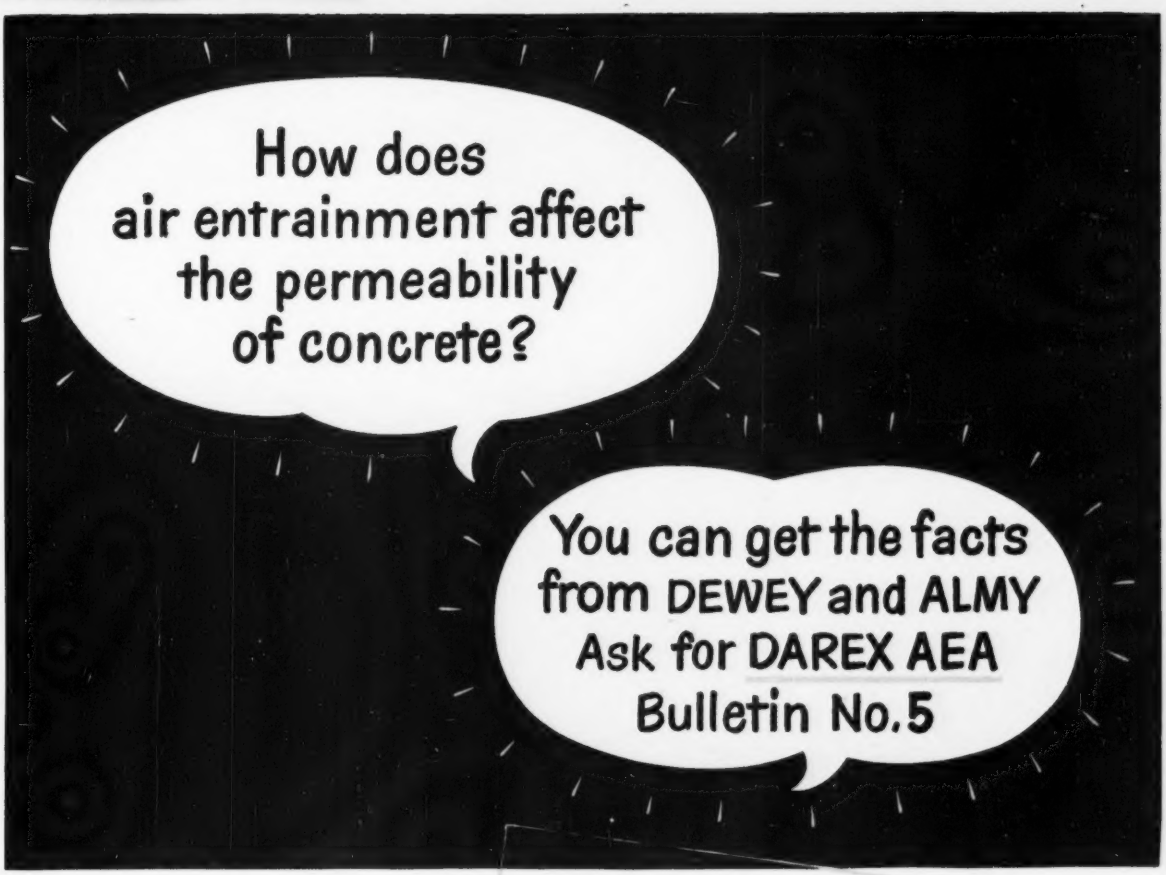
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You can get the facts from DEWEY and ALMY Ask for DAREX AEA Bulletin No.5

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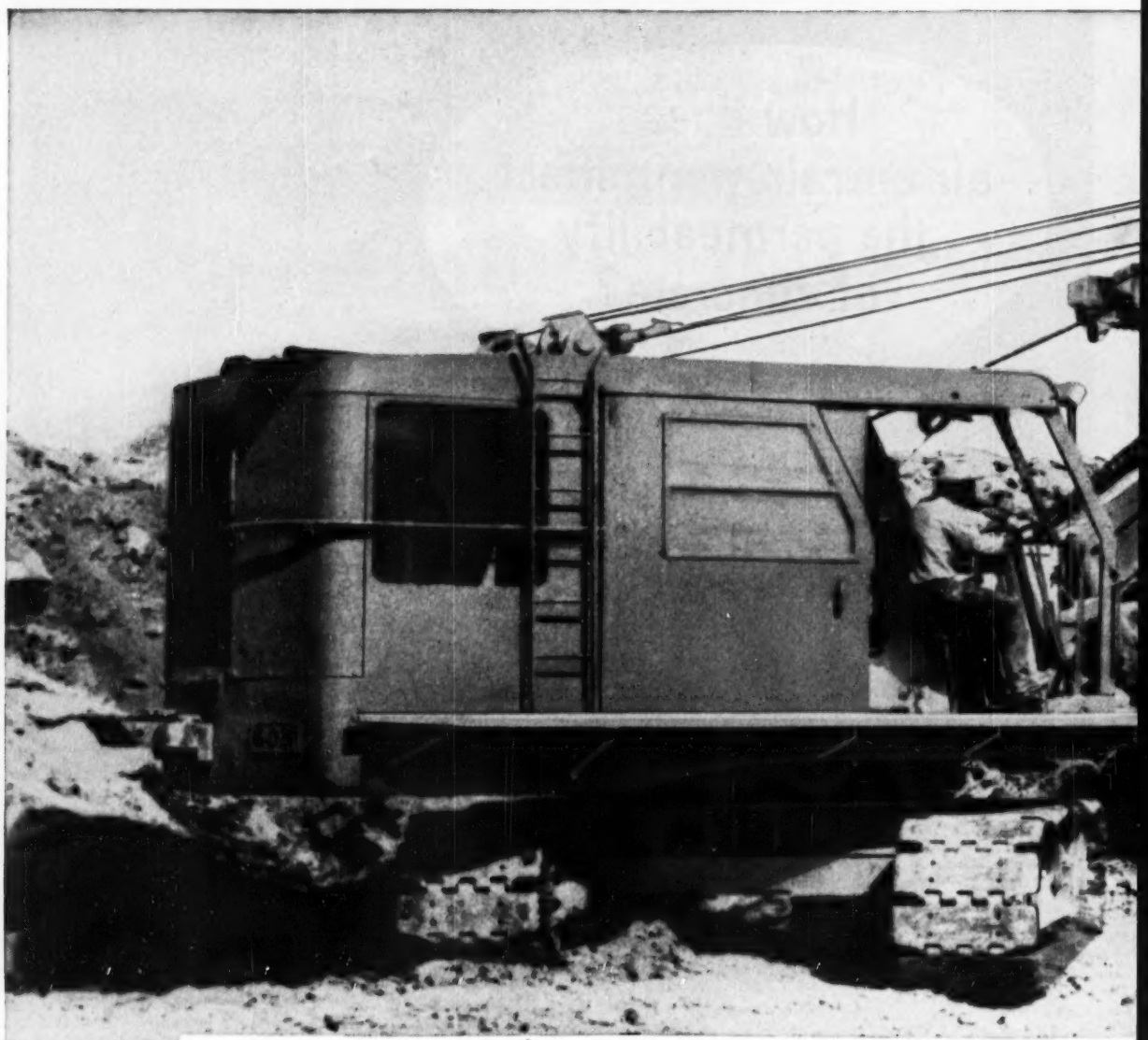

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READER COMMENT

Accident at Ft. Bragg

SIR: The loss of 20 Army Engineers by drowning when a boat capsized during a training problem at Fort Bragg, N. C., Sept. 2, is a deplorable reflection on the administration of the U. S. Engineer Corps. Certain basic tenets were violated:

1. "Safety first" should always be the criterion except in actual fighting where speed is of the essence.

2. A rudimentary requirement of the Engineer Corps should be that all its members have enough training in swimming to take care of themselves for a few moments in the water. Such training is as important as the proper use of a rifle.

3. The use of "Mae Wests" or life jackets should be so basic that except in actual fighting any deviation from it would be without excuse.

And this is the Army that wants to take care of our young men during Universal Military Training!

GREGORY M. DEXTER
Consulting Engineer
Scarsdale, N. Y.

CE Comment

SIR: In response to your suggestion, we are providing you herewith a statement concerning the training accident on Sept. 2 at Fort Bragg.

This accident, in which 20 men lost their lives, is indeed deplorable. Although these men were under the jurisdiction of a field commander, and were, therefore, outside the command of the Chief of Engineers, the public blame for such an accident must be accepted by the entire Army, including the Corps of Engineers.

The Army recognizes its responsibility for safety. There is a clear line of responsibility for establishing and following safety precautions, extending from the Department of Army level down to the commander of the smallest unit. Safety regulations are in existence and are generally followed explicitly. If they were not, how else could the Army, which must of necessity train men in many hazardous tasks, keep its accident rate to such a low level? In the year 1952 the entire Army's accident rate was only a little more than half that which U. S. industry experienced in 1951. Those engineer troops at installations commanded by the Chief of Engineers (only a small portion of the Army's engineers) had an accident rate in 1952 which was less than one-fourth the rate of the

civilian construction industry. What is more the Army rates included accidents occurring outside of duty hours and totally unrelated to training.

We are in an especially difficult period today, with short-term trainees required to absorb in a few weeks the essentials in many fields of military training, some of them potentially hazardous. To be effective, training must be realistic. Past experience has shown that the highest casualties in combat occur among troops whose training has not been sufficiently realistic. In some cases if the training were rendered completely safe it would be of no value because it would have lost all semblance of realism. The Army tries to strike the proper balance considering both the individual's safety and the Army's military mission.

There is a critical shortage of trained and experienced non-commissioned and junior grade commissioned officers throughout the Army, especially in technical services such as the Corps of Engineers. The Army was not permitted to recall experienced Reserve Officers to replace those separating from active duty after service in Korea; their places were taken by young officers just entering on active duty from ROTC and OCS. Thus we are faced with a more difficult training problem and, at the same time, have fewer experienced supervisors to do the job.

The men did not wear packs, weapons or tools. They wore a training uniform of fatigues, including combat boots. Swimming is not required Army Field Forces training. General checks, however, indicate that 60-70% could swim—say across or the length of a standard pool.

My personal opinion is that panic was the active cause. The assault boat flotation would sustain un-panicked men in the water—as in a swamped lifeboat.

An accident such as this one should not be viewed by itself in passing judgment on the Army or any portion of it.

A. C. Lieber
Major General
Deputy Chief of Engineers
for Military Operations

Thule architect-engineers

Sir: The article regarding the architects and engineers selected to design airbase and naval facilities in Spain (ENR Oct. 15, p. 21) was timely and of great interest, but just to keep the record straight, your reference to the construction of the Thule airbase in

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All of our member companies have centrifugal casting facilities for producing tougher, stronger *modernized* cast iron pipe. All can supply this pipe with cement lining centrifugally applied, resulting in sustained carrying capacity, reduced friction loss and lower pumping costs.

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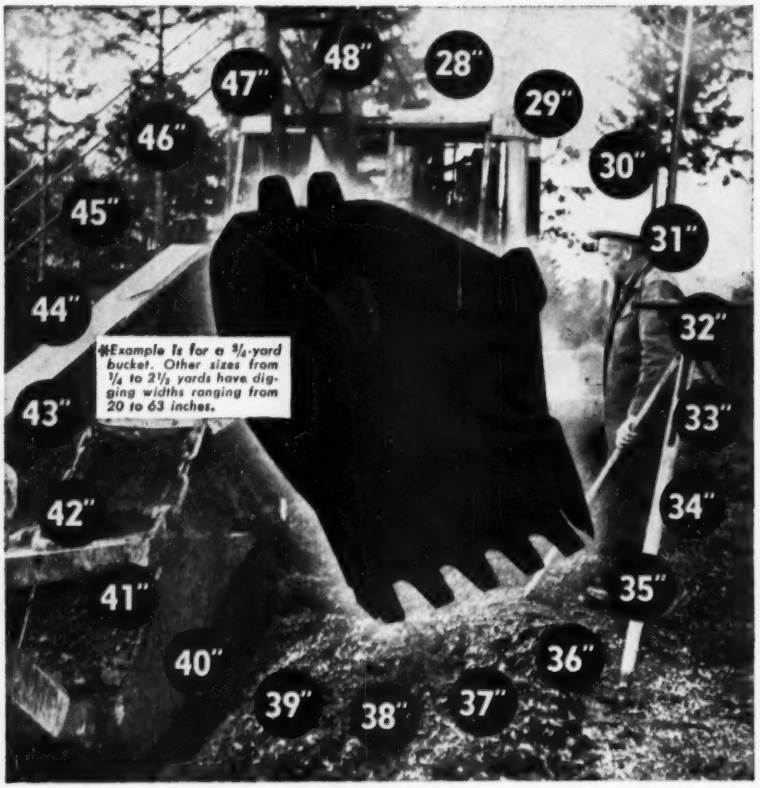
DIG TRENCHES—WITH ONE MACHINE

RIGHT to the INCH



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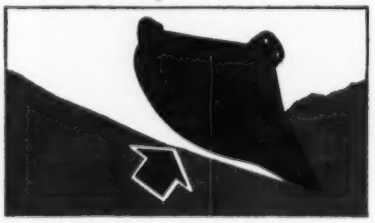
The ESCO Fastback hoe dipper digs a trench the width your contract calls for—right to the inch. You don't waste time and money on unnecessary digging and backfilling—and you dig all your trenches with one machine.

*For example, the ¾-yard Fastback dipper is made in three basic widths. By changing side cutters each basic unit gives you seven different widths. Result—*one machine* equipped with three ¾-yard Fastback dippers and side cutters can dig trenches anywhere from 28" to 48" wide—to full ¾-yard capacity—without overload. Other ESCO Fastback hoe dippers give you digging widths from 20 to 63 inches.

Put the money-saving ESCO Fastback to work on your trench digging jobs. Your ESCO representative will be glad to demonstrate, or write for Descriptive Bulletin 189.



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READER COMMENT

Greenland was in error in part. Our firm—Alfred Hopkins & Associates—and Metcalf & Eddy, a joint venture contract, under the direction of the Corps of Engineers, U. S. Army, designed and supervised the construction at Thule.

ARTHUR E. DORE
Alfred Hopkins & Associates
Architects
New York, N. Y.

Why did forms fail?

SIR: It was with great interest that I read the article published in ENR Oct. 15, p. 25, depicting the collapse of wood falsework, supporting a roof slab being poured for a concrete storage tank in Everett, Mass.

I have been making a study of scaffolds and falsework and find many of them to be underdesigned for the load to be supported. I have also discovered that some of the specifications published as standard are inadequate. With these specifications being adhered to, failures are inevitable.

From the information presented in ENR, I believe the falsework collapsed because it was not adequately designed for the load to which it was exposed.

To avoid such occurrences in my plant, I should like to know the final findings of the investigation board.

CLIFTON A. SHOOK, JR.
Safety Engineer
Portsmouth, Va.

CALENDAR

Annual Highway Conference, Maine Section, American Society of Civil Engineers, University of Maine, Orono, Dec. 18-19.

American Road Builders Association, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., Jan. 5-7.

National Constructors Association, annual meeting, Hotel Commodore, N. Y. City, Jan. 12-14.

Highway Research Board, annual meeting, National Academy of Sciences Building, Washington, D. C., Jan. 12-15.

National Association of Home Builders, annual convention and exposition, Conrad Hilton and Sherman hotels, Chicago, Jan. 17-21.

Land surveyors conference and exhibition, University Commons, Rutgers University, New Brunswick, N. J., Jan. 23.

Mason Contractors Association of America, Sherman Hotel, Chicago, Jan. 24-27.

Conference on Prestressed Concrete, University of Toronto, Toronto, Ont., Jan. 28-29.

Associated Equipment Distributors, Waldorf Astoria Hotel, N. Y. City, Jan. 31-Feb. 4.

California Industrial Safety Conference, Palace Hotel, San Francisco, Feb. 11-12.

N. J. section American Water Works Association, winter meeting, Essex House, Newark, N. J., Feb. 16.

American Concrete Agricultural Pipe Association, Fairmont Hotel, San Francisco, Calif., Feb. 24.

American Concrete Pipe Association, annual convention, Fairmont Hotel, San Francisco, Calif., Feb. 25-27.

Ask any progressive owner or operator why he equips his tractor with a Hyster Towing Winch. He'll say, "It's almost like having a second tractor up ahead all the time... ready to help you when you need it most." That's another way of saying Hyster Winches greatly increase tractor uses for more profit.

Hyster Winches increase tractor pull up to 92% over drawbar pull!

Full tractor engine power can be extended the length of the winch-line. Permits tractor to reach out and rescue stuck equipment, pull in logs or heavy objects. Saves time and keeps jobs going in all kinds of weather.

Matched Design of Caterpillar-built Tractors and Hyster Winches provides proper balance to develop maximum tractive effort—with good operating stability and maneuverability.

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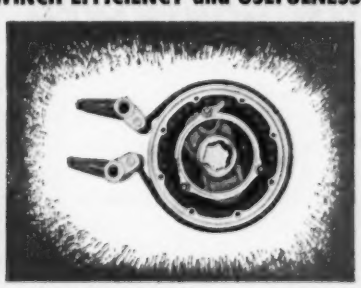
FAIRLEAD ASSEMBLY saves time maneuvering the tractor into yarding position. Reduces wear to winchline and tractor crawler assembly and saves fuel. Permits yarding from any angle to the rear of the tractor without the necessity of leading winchline straight from load to drum. (Optional for Models D8L, D7N, D6N)

BUILT-IN DRAWBAR provides added strength and rigidity to withstand severe vertical stresses encountered in arch logging and certain types of heavy-duty service. Yoke can be set in swiveling or non-swiveling (fixed) position. (Standard equipment on Model D8L, optional on D7N, D6N)



AUTOMATIC BRAKE, of special patented design, permits operator to pre-set brake before winching in a load—eliminates need for close coordination in controlling brake and clutch. For added safety, all brakes can hold loads greater than winchline capacity. (Optional on Models D8L, D7N, D6N)

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Built in Light, Medium and Heavyweight sizes . . . the latter models drill to as much as 45' depths, using steel changes up to 15'—the Medium has "Hydra-Lift" hydraulic control.

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THE EXCLUSIVE "DRILL AND BLOW" FEATURE MEANS YOU BLOW THE HOLE AS YOU DRILL!

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THE CONSTRUCTION WEEK

• **Boomerang**—Ohio legislators—who last year enacted a new axle-tax on trucks amid rosy visions of an added $20-million revenue for state highway purposes—were brought up short as neighboring states threatened to retaliate.

The retaliation is simple enough: Other states, which have agreements with Ohio that permit trucks registered in one state to operate in other states without added registration fees, simply will abrogate their agreements. Result will be multiple registration fees, and truckers have already indicated that such added tariffs can't help but reduce trucking in Ohio. Just what is scaring the truckers is demonstrated in Kentucky—where a new law (effective Jan. 1) would slap fees of from $22 to $300 on trucks in interstate commerce.

Virginia, Kentucky and Georgia have already notified Ohio of their intention to abrogate the agreements. Six other states have made threatening noises.

• **Raised eyebrow**—Another state's highway engineers had occasion to look dubiously at control legislation, when North Carolina envisaged results of 1953 legislative action that raised highway weight limits for trucks.

Said the Division of Statistics and Planning: The 1953 legislature materially weakened controls originally provided in 1951 by raising the axle load limit to 19,000 lb (from 18,000). Trouble is, said the division, most of the state's road system is designed for load limits of 18,000 lb.

• **Bid note**—B. F. Perry Construction Co. officials at Akron, Ohio, had some pondering to do over bidding competition, when a low bid turned out to be the high bid.

It happened this way. The City of Akron took bids several weeks ago on a new highway bridge, and Perry was low at $209,735. Then it was discovered that the contract couldn't be awarded, since the city council hadn't authorized such action properly. So the job was re-bid—and Perry re-submitted his offer at $209,735. But three other bidders on the second letting came in lower, the lowest about $6,000 under Perry.

• **To build or not to build**—You can take it as you like—either as a bargaining threat or actual intention—but California's Fallbrook Public Utility District is going ahead with plans for construction of a $3-million dam on the Santa Margarita River, and construction of a 4-mi, 24-in. connecting water line to the San Diego aqueduct.

What lends interest is Fallbrook's central position in the current legal battle with the U. S. government over disposition of waters of the Santa Margarita, which the government had claimed for its huge Camp Pendleton—built on the site of an old ranch that had held prime rights to the stream. Some observers figure the dam proposal a bargaining weapon for district officers in their attempts to work out some solution with Uncle Sam.

Underground activity won't sabotage THIS sewer

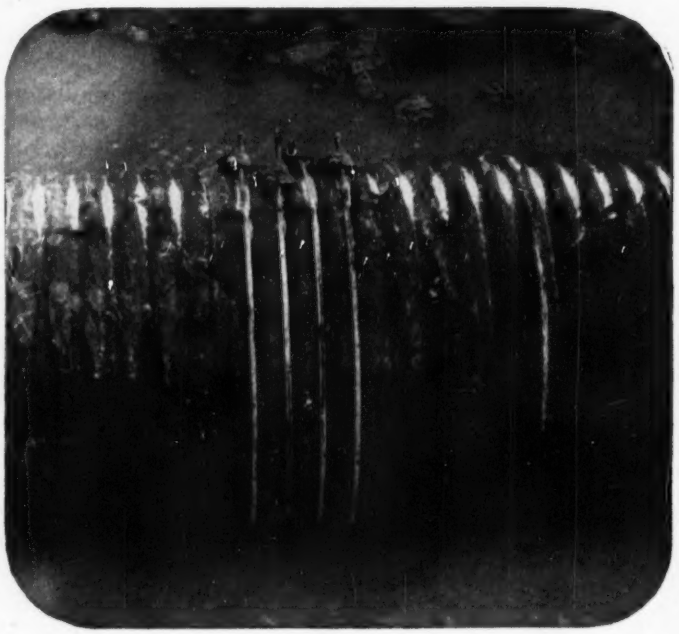
History won't repeat itself here. Infiltration and the resultant undermining caused settlement and ultimate failure of a rigid, short section sewer used in this airport. But with the installation of Armco ASBESTOS-BONDED Pipe, these costly dangers have been eliminated.

The long lengths and watertight joints of Standard Armco Corrugated Metal Sewer Pipe assure a conduit of uniform strength. Seepage is no hazard. In unstable soils Armco Pipe will adjust itself to shifting foundations without joint separation. Nor will it crush or crack under the impact of heavy loads.

There is an Armco Sewer Structure to exactly meet your specific requirements. Standard Corrugated Metal Pipe or Pipe-Arch is available as plain galvanized for normal service, ASBESTOS-BONDED to handle severe corrosion or PAVED-INVERT to combat erosion. Armco MULTI-PLATE Pipe, Arch and Pipe-Arch extend the advantages of corrugated metal design to larger drainage structures.

Write for more information on these pre-engineered corrugated metal structures. Armco Drainage & Metal Products, Inc., 1743 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

PIPE THAT TREADS WATER. Here is a close-up of the Armco watertight joint. Note the four bolted rods that say "no" to seepage.



ARMCO SEWER STRUCTURES

WASHINGTON OBSERVER

Repeal of the Walsh-Healey Act is one possibility that might come from the Administration's maneuverings to get a labor program through Congress.

It would be part of a trade-out designed to put management behind part of the legislation Secretary Mitchell recommends to the President and eventually to Congress.

Some management groups say they'll go along on higher minimum wages which are sure to be a part of the bundle. In return, they argue with Mitchell that Walsh-Healey's special minimums on government contractors are no longer needed and should be ended.

Mitchell is trying out this idea on contractors and unions alike. His idea is that a $1.00 to $1.25 minimum wage plus closing up loopholes and exemptions might make a good trade for Walsh-Healey repeal. Mitchell also wants higher unemployment compensation pay for a longer period.

•

Federal aid to highways for the next two-year period will be thrashed out in joint meetings of the key men of both the House and Senate public works committees.

Big question: How much more federal money should be spent on highways for the two years beginning July 1955? Federal grants to states now run to $575 million per year; the committee members will be talking about increases that would bring federal outlays as high as $1 billion per year.

The highway legislators may recommend as much as $800 million per year, but there's no telling whether Congress finally will approve that much.

•

Drive is on to put more money into the 38,000-mi main trunk roads—the most heavily traveled interstate network that is also most important to our defense. Congressmen want to earmark more funds for this web than the $25 million per year specified for the first time in the 1952 Highway Act. Some want to put as much as $100 million to $250 million of federal highway funds into these high-priority routes. Another suggestion: Let the states use 75% federal dollars in financing such mileage, instead of the present 50-50 requirement.

Allocation formula for these main trunk roads may be changed to favor the heavily populated states. A new formula based on population alone would replace present formula used for all federal grants, which gives equal weight to area and post-road mileage.

•

Resources for the Future, Inc., may be a factor for some time by sponsoring additional conferences and research projects (see page 30). Reuben G. Gastavson, president of the organization, says that from here on out his group will draw on Ford Foundation funds to do for "social and economic health" what the Rockefeller Foundation now does for advancement of medical knowledge.

•

AEC is stepping up efforts to get private companies to build the "conventional" parts of the $40-million nuclear power plant it has under way. The alternative is a straight government-built project. Selection of a site for the plant may depend on proposals from private industry for participation.

•

Utilities may find it easier to raise construction money as a result of Federal Power Commission's decision to ignore fast amortization benefits in fixing rates for gas and electric power.

Better Private Roads

Addition of Natural Rubber Powder To Asphalt Will Give Increased Customer Satisfaction and Profit To Contractors

Contractors interested in adding a new and profitable selling feature to private driveway installations should plan to recommend the addition of 4% natural rubber powder (by weight) to the bitumen (asphalt) used in the regular paving materials. No change in mixing or laying methods is required.

Such an addition of rubber powder will increase the life of the private driveway and reduce maintenance costs. Natural rubber gives the pavement elasticity and greatly reduces the effect of weathering on pavement that receives very little vehicle traffic.

Road contractors interested in this new development can get complete information and assistance from the Natural Rubber Bureau's Rubber Road Research Laboratory.

Natural Rubber Bureau

1631 K Street, N.W., Washington 6, D.C.

Natural Rubber Bureau Research Laboratory
Rosslyn, Virginia

Parking solution: slow and not at all sure

A lot of people are trying hard, and some answers are emerging—but there's no good solution yet for the problem of what to do with the enormous amount of wheeled traffic

ENR Staff Report

Some day and somehow, there will emerge a set of real solutions for the problem of how to handle—and what to do with—the ever growing avalanche of motor traffic in every U. S. community. But despite years of earnest effort there isn't a real answer in sight.

Ever since the end of World War II the problem of traffic handling has been snowballing at an enormous rate—to the point that many a community is now facing economic strangulation because of its inability to conduct even normal business.

Many solutions have been advanced, and some of them have been implemented for long enough to warrant a second look. Because the construction industry is so vitally concerned—both as planners and builders of the streets, the parking areas, the interchanges and other facilities that might affect congestion and as businessmen whose own operations are seriously hampered by traffic delays—ENGINEERING NEWS-RECORD has undertaken to take an overall look at the situation. Here are the results:

- No one argues over the contributing causes of congestion—but there's bitter controversy as to the order in which these causes (lack of off-street parking, narrow roadways, trucks and deliveries at wrong hours, inadequate public transportation) should be eliminated.
- The lack of adequate off-street parking areas is generally accepted as Public Enemy No. 1—but it is becoming obvious that provision of such facilities isn't a complete answer.
- Expressways and similar facilities must be planned with proper consideration of what's to become of the traffic they pour into city streets.
- Cities must revamp traffic patterns that are unsuited both to their street layout and the needs of the traveler.
- Inefficient public transit systems that foster greater use of private vehicles are a major factor.
- Whole-hearted support from police and other enforcement agencies is a must.

ENR's survey makes more obvious that there isn't any easy answer—but rather that any solution must be evolved on a local level, and be intelligently compounded of a number of remedies to provide a local answer.

To date, too many of the attacks on congestion have been one-direction, one-shot thrusts. Too few have been coordinated.

• **Attack points**—In the years since World War II, many attempts have been made, and many more are being made now as businessmen and the communities in general realize the serious nature of the problem. ENR's editors have picked several for study.

• **The Buffalo plan**—Until 1952, Buffalo had made only sporadic and ineffectual progress in the direction of providing adequate parking facilities. Programs were proposed and scrapped: At one time money was allocated to acquire land for a large parking ramp that in the course of more intensive study proved impracticable.

But in February 1952, the city's Division of Parking retained Wilbur S. Smith, of Smith, Dibble & Co., transportation and planning consultants, and in December of that year his survey report was submitted to a seven-member city board of parking.

The board, following Smith's recommendations closely advertised for bids on three downtown garages and one fringe-area garage in January 1953, and worked out the "Buffalo Plan for financing."

Under the $6-million plan, merchants in the city pledged the establishment of a corporation to operate the city-built structures, either through lease to private operators or directly, supplying sufficient operating capital to guarantee the city a rent at least equal to the cost of interest and amortization of the bonds financing construction.

Under the plan, it is estimated that

. . . No easy cure for traffic dilemma

the capital investment will be liquidated in 26 years. The merchant group will receive a limited tax exemption for a period of 15 years.

(In September this year, Robert Moses, Construction Coordinator of the City of New York, impressed with the Buffalo program, presented his version of the plan to a group of bankers, merchants and business executives. He stressed the fact that this plan is self-supporting, and in no way affected the bonded indebtedness of the city. Moses' presentation was applauded, but to date only a few merchants have shown interest in it.)

• **The Spokane program**—Spokane's parking and congestion problem became so unbearable last summer that Safety Commissioner Carl D. Canwell decided to take drastic steps. He proposed to end the shopper-trucker impasse by instigating night deliveries only—and came close to embroilment in an open revolt with truck drivers, their bosses and merchants. But during the chaos he spotted the leaders in the opposition, and through them a 14-man committee of delivery representatives was organized to study the truck parking situation.

In a few months' time they had a plan and shortly after, the approval of that plan by the city council. The truck tangle was quickly ended, and it is estimated that "truckers are saving $1,000 a week." The committee, working with merchants and municipal representatives recommended these steps:

• Early morning enforcement of parking regulations, beginning at 8 a.m. daily. This opened up downtown curbs before store hours for delivery trucks. (Before that police began checking meters at 8 a.m., all-day parkers would clog the curbs by 9 each morning and delivery trucks were frozen out.) Three additional policemen on motorcycles patrol the streets now and truckers find the curbs open often in front of the store they want to serve.

• Additional short-time loading zones in congested blocks. Metered zones were converted to loading zones from 7 to 9:30 a.m. in blocks where deliveries are normally heaviest. Thus 44 zones were created this way in the business district where truck drivers were urged to back in, thereby adding an extra space over the former parallel method.

Canwell and the committee based their campaign upon cooperation among truckmen, and it worked. Mimeographed questionnaires were sent to drivers who spotted clogged alleys, congested blocks, poorly timed traffic lights and uncooperative store owners.

Delivery schedules were distributed among store owners with an invitation to discuss them and stressing their definite right of appeal.

So cooperative were all concerned that, with the city doing its share, alleys were cleared, loading platforms reconstructed and barriers removed, much of it being done at the merchant's expense.

• **Nashville, Tenn**—Since 1950, private industry has provided more downtown off-street parking spaces than had been recommended by the last survey of the city's parking needs, according to the Nashville Parking Board.

In 1950, a group of Chicago parking experts recommended the addition of 1,200 parking spaces in the "core" area of Nashville. There have been added 1,299 off-street spaces since that recommendation, and the total number of additional spaces in the over-all downtown area is placed at 3,247—all provided by private operators.

• **Chicago**—A year ago, the city council approved revenue bonds totaling $50 million (ENR Oct. 16, 1952, p. 47) for the construction of five municipally owned garages.

The program is officially under way, with the approval (Nov. 16) of a contract for the construction of a $1.1-million, 12-level garage. Seventeen bids were received with the contract going to A. L. Jackson Co., Chicago contractors.

The city has advertised for bids for construction of the second garage, a 14-level affair with five elevators and a capacity for 715 cars (see cut).

The two garages are part of the initial phase of a parking program that now calls for nine buildings and five lots, (total cost: $22.6 million) according to Virgil Gunlock, Commissioner of Public Works.

After actual construction starts, Gunlock said, he hopes to begin a new garage each successive month and to have all completed for public use by the summer of 1955.

The nine garages will have a total capacity for 5,043 cars, with the smallest having space for 262 vehicles and the largest for 1,206. Some will be ramp-type structures, with parking levels above and below the street. The largest of them actually will be two buildings, one of them five stories high.

The parking lots will hold 1,302 cars and they will cost approximately $1,400,000.

All of the city-owned facilities will be leased to private operators, but the parking fees will have to be approved by the city council.

The remainder of the $50 million in bonds—to be repaid from parking fees—will be used as the need to ex-

BUILD 'EM HIGH—Hoist-type, 14-level parking garage will take 715 cars from Chicago's Loop section. Architects—Shaw, Metz & Dolio.

BUILD 'EM LOW—New 141-car parking ramp recently opened in Eau Claire, Wis. Cost will be absorbed through parking meter revenue.

pand parking facilities arises, according to Gunlock.

De Leuw Cather & Co., Chicago consultants, have been retained as independent engineers for the parking-facility program, as a bond-issue requirement.

• **Washington, D. C.**—This city is one of the few that seem to be keeping abreast of the parking problems. A ten-member parking agency—composed of three public members, three lot operators, three government officers and a representative of the Capital Transit Co.—admits that there is a problem, but believes that it is maintaining its position on top of it.

Washington relies almost entirely upon private enterprise for its parking facilities, offering 16,539 off-street spaces which show a turnover ratio of 2.5 per day.

The municipal government offers no direct parking services beyond providing for its own employees, and is in the business only to the extent of renting to private operators city-owned space for 1,000 cars.

The agency follows a general policy of pinpointing the area of need and letting private enterprise take up the slack.

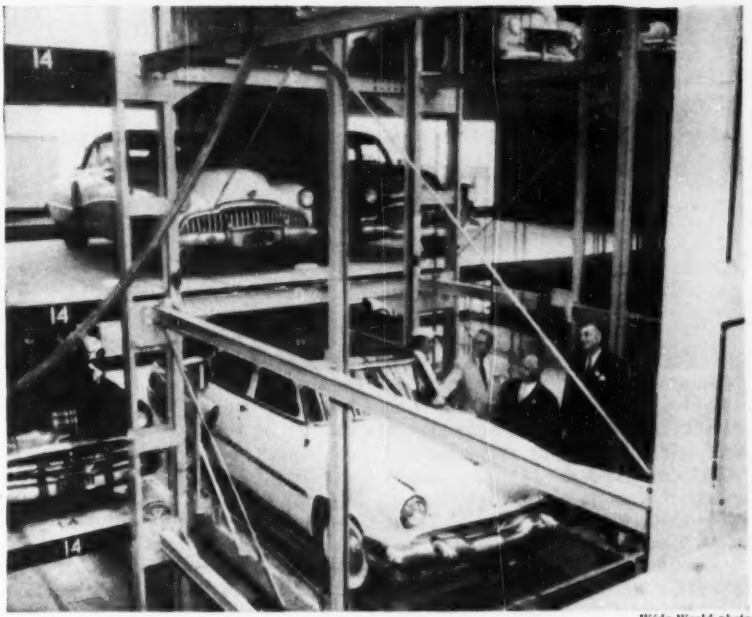
Federal office workers add to the downtown traffic load for all-day parking, but the federal government provides 3,785 spaces, largely taking care of its own.

During rush hours, 7 to 9:30 a.m., and 4 to 6:30 p.m., arterial streets are cleared of all parked vehicles—if the owners don't move them, the District Police haul them away. Other gimmicks, such as no turn barriers, one-way streets and unbalanced lanes also are used to keep rush-hour traffic moving as fast as possible.

One thing that takes the pressure off the Washington parking group is complete lack of local political maneuvering. Thus, the parking agency can go ahead on its own and plan with some continuity and projection.

All is not on the rosy side, however, for the metropolitan police claim they haven't sufficient personnel to do the best job of enforcement, and some inadequacy there is apparent.

• **Private association**—Parking lot operators have banded together and formed a national trade association, the two-year-old National Parking Association, to pool information and support their interests. The association has about 5,000 members in the U. S., Canada, Europe and the Far East. They estimate that private enterprise has $3 billion invested in the parking business, and that it provides 94% of the off-street parking space in this country.



Wide World photo

ONE SOLUTION?—Automatic and semi-automatic parking devices have the advantage of low area per car. One disadvantage: restricted waiting area.

• **Through-routes a must**—The expressway comes into its own only when there are well planned radials or throughways that will lead out-bound traffic around, over or under the "core" areas of the city.

• **Cleveland**—This Ohio city's highly publicized plan for a $300-million freeway system has been in doubt as a result of a survey made early this year. The survey indicates that the 90-mi system, which would integrate sections now in use, is inadequate for both present and future needs.

Cuyahoga County Engineer Albert S. Porter says that he fears that in the future traffic will have to be diverted from some of the freeways onto crowded main streets.

The key structure in the freeway system is the proposed $40-million, inner-belt bridge. By 1975, this will be inadequate, according to the survey.

The cause of the dilemma appears to be that the network was superimposed on a radial traffic pattern to and from downtown Cleveland, and the survey revealed a great amount of circumferential traffic in the outlying suburban and industrial areas.

There is hope in Cleveland that the city's new East-West Rapid Transit Line will be a valuable step toward solution of its problem.

• **North Sacramento**—On the credit side of the expressway ledger is an economic study by the National Highway Users Conference, that measured the effects of a new California freeway on the business area of Sacramento.

The survey showed that, while average daily traffic through the downtown area dropped off 44%, the total volume of business during the two-year period following the opening of the freeway increased 31%.

According to a California State Highway Department investigation, the gross business per establishment in North Sacramento had gained 28% during the same period, while that of the county gained less than 10%.

• **Transit**—In an address in October before the City Planning Division of the ASCE, George W. Anderson, of the American Transit Association, stated that transit riding reached its peak in 1946.

"World War II controls pushed transit riding from about 13 billion annually in 1940 to more than 23 billion in 1946. Final figures for 1953 are expected to show that transit riding has declined to about 14.5 billion." He said, "When the increases in our urban population, which have occurred since 1940 are taken into account, we find that transit rides per capita are less today than in that year."

His presentation clearly indicated that in a coordinated attack on congestion, the transit system rates serious consideration. If the transit systems were made more acceptable to the public, there would certainly be fewer cars in the midtown sections—and fewer cars mean better transit facilities.

Administration's new housing policies being readied for action by Congress

Legislators are particularly anxious to get quick passage of bills affecting VA and liberalizing FHA provisions

The Administration is shooting for an early decision on housing policy. Eisenhower has his sights set for a positive declaration in the State of the Union message in January.

A fast timetable has been set up to make that date. The wheels started turning last week when the President's advisory committee on housing policies buttoned up its 75-day job. A final report embodying the prime and alternate proposals of the 23-man group is now at the White House, with added notes by Chairman Albert Cole, Eisenhower's housing chief.

Eisenhower is going to lean on the report for all the help he can get. But the Administration will set its own housing policy. The advisory group's assignment was limited strictly to advice, as the members well understood. They drafted no proposed legislation.

What the Administration wants in new housing legislation will be laid before GOP congressional leaders when they come to the White House Dec. 17 for a three-day talkfest on the 1954 legislative program. Eisenhower will go half-way or farther to form a united front with his party chiefs in Congress, so long as concessions don't involve a backing-down on principles.

• **Congressional strategy**—The Administration would like to see fast action on an omnibus housing bill that would embrace all facets of federal aids to housing. But the legislators may advise splitting the package. They could foresee quicker passage, probably, for a bill confined to FHA and VA loans. A longer battle would be expected over the hot, controversial issues of public housing slum clearance and the Federal National Mortgage Assn. (the government mortgage market to which lenders can sell their FHA and VA paper, within limits prescribed by law).

Easier congressional approval of an FHA-VA bill rests on two well-established assumptions: (1) that the Administration plans to liberalize and broaden FHA loan insurance, and (2) that it will leave VA home loan functions in the Veterans Administration. Congress would go along with a bill of that kind.

On that score, Democrats as well as Republicans are ready to vote for a measure that would give older homes an even break with new houses in FHA mortgage terms—and that also would broaden FHA loan insurance to encourage both improvement of run-down dwellings and renovation of existing homes that need a little sprucing up to hold their place in the parade. And neither party is so politically naive as to buck the opposition of veterans groups—backed by some lender organizations—over transfer of VA loan functions to another agency.

• **Affect on housing starts**—There are reasons for scheduling early action on such a bill. It would bring up the whole list of proposed changes in FHA and VA home loan legislation, including higher ceilings for interest rates, longer allowable terms for mortgage maturities, and lower down payments. While these changes hang in the balance, lenders and home builders would move in a cloud of uncertainty when the bill clears Congress, it will also clear the air. New housing starts should pick up.

And the pickup may be needed to meet predictions of Administration housing officials. Two months ago they talked of 900,000 new housing starts for next year. Now their estimates are edging up to one million—only 10% under this year's total.

The really tough issues will come in public housing, slum clearance and the Federal National Mortgage Assn. (Fanny Mae). If an acceptable path could be found, the Administration would be happy to put responsibility for public housing on its way back to the states and cities. But the Administration sees no such possibility. As a result, it faces up to the fact that the federal government must continue to subsidize housing for low-income families. To do otherwise would be political suicide.

• **New public housing concept**—But the Administration wants to do something that will reduce the load of public housing—make the load less permanent. Its thinking on procedures remains to be crystallized, but the aim is multi-story apartment houses, get the local housing authorities to build smaller projects of detached or row-house type in which the renter can acquire his individual property—become a home owner—as the family income improves.

Tied up with this idea are proposals to make buying easy under special FHA terms—maybe no down payment and a 40-year mortgage maturity. The transfer to private ownership, of course, would bring private financing into the picture—and also would pay back the amount of the mortgage into the funds of the city's housing authority. Some lenders—such as savings and loan associations—are backing the idea.

New site proposed for Libby Dam

Army Engineers favor a new site for the proposed $263-million dam on the Kootenai River near Libby, Mont., following a revision of plans aimed at overcoming objections raised by U. S. business interests in the area and at giving the proposition more appeal to Canada.

The project was authorized by Congress in 1950 and submitted to the International Joint Commission the following year. However, before the application was acted upon by the IJC, it was withdrawn by the U. S. at the request of the Corps of Engineers to permit clarification of local problems (ENR April 16, p. 26).

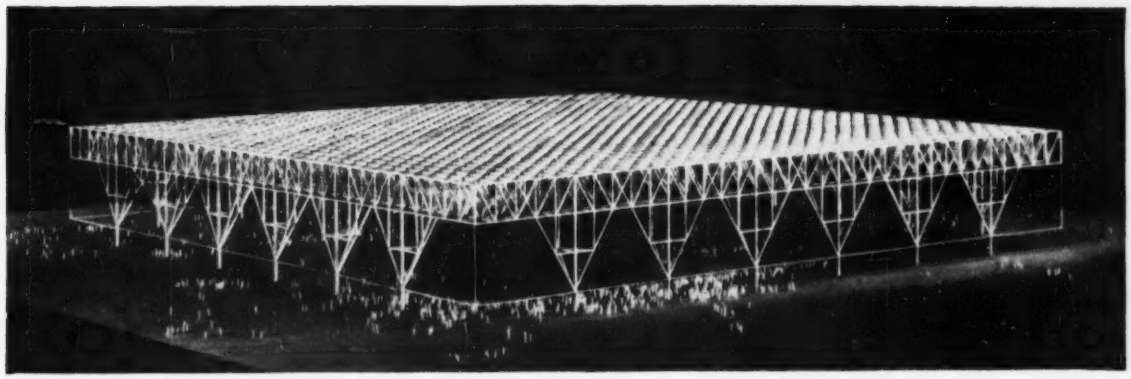
Site now favored is four miles farther upstream, at Mile 217, above the confluence of the Kootenai and Fisher rivers. It has been adopted as being more economical from a construction standpoint because rail and road relocation expenses would be less. And, according to Col. N. A. Matthias, Seattle District Engineer, the new site should eliminate possibility of adverse effect on industries. Opposition had come from lumber and mining interests and the Great Northern R.R.

The 95-mile reservoir behind the dam would extend 42 miles into British Columbia, providing a surface area of 47,800 acres at normal full pool and 5 million acre-ft of usable storage for flood control and power production.

The initial power installation would develop 600,000 kw, to be increased ultimately to 800,000 kw, with a head of 350 ft on the turbines.

The project as now proposed calls for a straight, gravity-type concrete dam 400 ft high and 2,700 ft long, including a spillway crest 360 ft long, and containing 3.5 million cu yd of concrete. The powerhouse, on the left downstream toe of the dam, would be 95x650 ft.

The dam's storage would increase power production at downstream plants on the Columbia River and provide major protection to river areas below the dam, which were hit hard by floods several years ago.



WORLD'S LARGEST CONVENTION HALL will be a 700x700-ft, single-story building with no interior columns.

Chicago Coliseum roof will span 500,000 sq ft of unobstructed floor

The world's largest convention hall—providing about 500,000 sq ft of unobstructed floor area in a 700x700-ft single-story building—has been designed for Chicago. It would have a seating capacity of 50,000.

Ludwing Mies Van der Rhohe, director, Department of Architecture, Illinois Institute of Technology, designed the proposed building. Frank J. Kornacker, of Chicago, was consulting structural engineer.

From a structural standpoint, the proposed design has several unique features. Particularly notable is the two-way truss system to support the roof. This system, never before used on such a large scale, is a network of 700-ft span, all-welded trusses having common vertical members where they intersect each other at right angles.

The entire truss system and supporting exterior columns would be made up of wide-flange beams in the 14-in. series for simplicity of fabrication and erection. Trusses would be 30 ft deep and spaced 20 ft c-c each way. Exterior columns would be spaced 100 ft apart.

The trusses would be cambered to take a 14-in. dead-load deflection at the center of the building.

• **Simplified erection**—Erection of the four exterior and sixty-eight 700-ft span interior trusses would be simple, the designers believe. It would require only two erection columns for each erection crew. Chord members would be fabricated in two-panel lengths (40 ft).

With the exterior trusses and their supporting columns in place, an erection crew could start at any corner and erect two 20-ft exterior bays of truss members completely across the building. The first temporary erection column would be set at the second panel point and the second column at the fourth panel point. When four bays of steel had been erected, the first column would be "leapfrogged" ahead to the sixth panel point, and so on.

Total weight of structural steel would be between 25 and 30 lb per sq ft of floor area.

The building would have a total height of 105 ft above street level. Its main floor would be depressed 10 ft below ground level, while the lower chords of the 30-ft-high roof trusses would be 75 ft above ground level. This would provide a clear height of 85 ft above the main floor.

The lower 15 ft of the exterior walls would be set in 20 ft, forming a covered arcade completely around the building. Spectators would enter at street level from any side of the hall through this arcade and have an unobstructed view of the building's tremendous interior.

• **Versatile use**—Through the use of "free-standing walls," parts of the large hall could be used for small conventions and exhibitions. The free-standing wall panels could be arranged to make smaller areas within the immense hall. When not in use, they could be taken down and stored. The thought behind the architecture is to allow the building to be put to as many uses as possible.

The convention hall would be air conditioned. Restaurants, meeting and conference rooms, and other service facilities would be placed in an adjacent building. The meeting and conference rooms could accommodate small conventions, and the dining facilities would be open the year round, even when the hall is not in use.

The main part of the convention hall was designed to be placed at ground level so that any object, regardless of weight, may be exhibited. For instance, entire freight cars and other heavy industrial or construction equipment could be exhibited without worry about whether the floor would support the load. Roads and railroad sidings would allow for easy moving of exhibits to and from the building.

Preliminary estimates place the cost

PROPOSED SITE for coliseum is on Chicago's near southside, which would make it accessible to airport and Loop district. Covering 12 blocks, it will provide for parking as well as service and display buildings.

of the building at about $10 million, exclusive of the site. Of this amount the building itself would cost in the neighborhood of $5.5 million; and installed equipment such as air conditioning, heating and ventilation, plumbing, lighting and electrical work would cost about $4.5 million.

Financing would be carried out with grants appropriated by the Illinois General Assembly from the state's Fair and Exhibition Fund, which derives its money from a tax on race track parimutuel betting.

Columbia Basin jobs

Bidding on $96 million of dam construction and equipment is scheduled

Bids for $95.7 million worth of construction work and equipment in the Columbia Basin will be called by the Army Engineers starting this month and continuing into next summer.

The Portland district will get the lion's share—a total of more than $88.7 million, including three contracts of more than $10 million at The Dalles Dam—according to Brig. Gen. Don G. Shingler, North Pacific Division Engineer. Other bids will be opened at Seattle and Walla Walla offices.

Bids will be opened Dec. 22 for excavation and substructure for main unit bays 15 to 22 at The Dalles powerhouse, fish ladders and east concrete non-overflow dam. On June 15, bids will be opened for construction of the navigation lock, including two derricks, adjacent gravity dam and fish ladder.

Bids scheduled for June 29 involve design, manufacture and installation of main generators at The Dalles powerhouse.

Other Portland district contracts will cover installation of mechanical and electrical equipment, manufacture and delivery of intake gates and operating machinery for Lookout Point Dam.

Most of the work in the Seattle district will be at Chief Joseph Dam, where bids for two main generator units will be opened March 1. Bids for electrical equipment come up Aug. 3, and warehouse and maintenance bids, June 15.

In the Walla Walla district, bids will be opened Jan. 15 for installation of imbedded turbine parts at McNary Dam. Other work scheduled for contract includes slide repairs and highways in connection with Lucky Peak Dam and levee and revetment work on the Salmon and Clearwater Rivers.

Four Spanish bases contractors name top management at N.Y. headquarters

The four architect-engineer firms holding the contract for work on U. S. bases in Spain are reported to have agreed to the naming of Brig. Gen. William F. Heavey, Ret., as their general manager to be headquartered in New York.

General Heavey, who retired from the Corps of Engineers in 1947, has been with Frederic R. Harris, Inc., one of the four A-E contractors, for the past year. He joined the firm after serving three years as general manager of the port of Houston, Texas.

It is also understood that the contractors are appointing as assistant general manager, Charles Hitchcock, who has been associated with the Metcalf & Eddy-Alfred Hopkins job on the Thule air base in Greenland. Metcalf & Eddy is another member of the Spanish base architect-engineer group.

Maj. Gen. Lee B. Washbourne, director of installations for the Air Force, speaking last Thursday before the New York building congress, had this to say about progress being made:

By the first of January, selection of a construction contractor will be announced; by late summer of 1954, substantial actual work should be under way in Spain. He estimated that about three years will be required to complete the work.

Meantime the U. S. initiated its new $85-million economic program for Spain, with the Foreign Operations Administration's first authorization for commodity purchases. The $2-million authorization was issued to finance purchases of copper, tinplate and aluminum.

Brig. Gen. William Heavey

General Heavey, a West Pointer, has a civil engineering degree from MIT. From 1917 through 1947, he served with the Corps of Engineers in district, division and Chief of Engineers offices. He specialized in hospital, air base and rivers and harbor work.

Prior to his retirement in 1947, he was district engineer at New York City. Gen. Heavey had a distinguished World War II record in the Pacific, participating in 87 landings.

Tornado takes heavy toll at Vicksburg

The tornado that struck historic Vicksburg, Miss., about 5:30 pm Dec. 5 flattened nearly every wood-frame structure in its way, but left steel-frame structures virtually undamaged. At least 29 persons are known to have died in the disaster and over 260 were hospitalized. Damage is estimated at $25 million.

This twister was the worst of four that damaged areas in Mississippi, northern Louisiana and southeastern Arkansas last week.

The Vicksburg tornado is the most significant of the four, not only because of the large number of fatalities and greater damage but because it hit the business section of a fair-sized city (pop 28,000).

This tornado apparently originated near the point where the Yazoo Canal joins the Mississippi River. Bouncing like a rubber ball, the twister traveled northeasterly two miles, striking the ground three times. One place it hit included Washington St., the city's main thoroughfare.

There, it devastated two blocks (700 ft) on the west side of the street. This had been lined with buildings two and three stories high, of brick bearing-wall construction with wood roof and floor systems. Many of these buildings were about 100 years old.

One of the buildings hit was a theater with about 75 persons inside. The walls blew out and the timber roof dropped in.

Yet, the nearby 10-story Vicksburg Hotel appears to have suffered no structural damage. It has a structural steel frame.

Similarly, the steel-frame Vicksburg City Auditorium—as well as steel-frame railroad buildings survived with only minor damage.

SOLDIERS of the 333rd Army Engineer Pipeline Company from Fort Leonard Wood coupling sections of the 4.8-mi temporary water supply line laid down in 54 hr for Edina, Mo.

Army pipeline unit answers emergency call of drought-stricken community

An Army Engineer unit from Fort Leonard Wood went to the rescue of drought-stricken Edina, Mo., last weekend and in a 54-hour round-the-clock operation laid a 4.8-mi temporary pipeline from the town's almost dry reservoir to a country club lake.

Edina, in the northeast corner of Missouri, is the county seat of Knox County, designated as a drought disaster area by the federal government. Normally, the town gets its water from wells, which had gone dry six weeks before. Meantime, pumping from a 10-acre reservoir lowered that source to the danger point. And, cost of hauling drinking water from the country club lake was depleting the local treasury.

Because of lack of funds a plea to the state for help had to be passed on to the military. And, the military responded by dispatching the 333rd Army Engineer Pipeline Company from Fort Leonard Wood—a 156-man task force with about a two-mi-long convoy of trucks.

Under the command of Lt. James L. Boyles, who had served with the 82nd Engineer Pipeline Company in Korea, the outfit completed the job between late Saturday, Nov. 28 and early Monday, the 30th. The surface line consisted of 20-ft lengths of 6-in. pipe, each weighing 200 lb. Pipe sections, designed for use in combat zones, were coupled together and required a minimum of welding. A large pump and two booster units were installed.

The pipeline will operate for about two weeks and is expected to transfer enough water to the reservoir to meet the needs of the 1,700 inhabitants through the winter.

Two relocated bridges dedicated on Missouri

Two bridges, both replacing crossings that will be flooded out by Fort Randall Dam 100 miles downstream on the Missouri River, were dedicated at Chamberlain, S. D., this week.

One was a new Milwaukee Railroad single-track, 4,890-ft structure, consisting of through truss, deck truss and deck girder spans. The railroad project also included considerable relaying of track and a new depot for Chamberlain for a total cost of $7 million.

The second bridge, in connection with a relocation of U. S. Highway 16, is a combination of the superstructures of the old bridges that were towed to the site and placed on new piers (ENR June 11, p. 24). One was towed 100 miles upstream from Wheeler, S. D., and the other from a nearby site at Chamberlain.

Bridges and other relocation works were financed by the Army Engineers as part of the Fort Randall Dam project.

Puget Sound span

Army Engineer report is favorable, provided that clearances are increased

An Army District Engineer recommendation favors the bridging of Puget Sound at any one of three locations west of Seattle, provided greater horizontal clearances are specified than originally considered for the $100-million project.

Col. N. A. Matthias, Seattle District Engineer, in a report to the Chief of Engineers has concluded that a Puget Sound crossing, which will be constructed by the Washington State Toll Bridge Authority, would not unreasonably interfere with navigation if increased clearances are required.

On Route No. 1, from Seattle's Fauntleroy District to Vashon Island, the authority had proposed a horizontal clearance of 400 ft at the Fauntleroy end, with two navigation openings of 500 ft, and one of 400 ft at the Vashon Island side. Col. Matthias specifies two openings of 380 ft and 640 ft at the Fauntleroy approach and 590-ft and 800 ft openings toward Vashon Island. This is the route that has been favored by the consulting engineers.

On Route No. 2, from Alki Point in Seattle to Bainbridge Island, Col. Matthias calls for a single 800-ft opening at the Alki Point approach rather than the two 500-ft openings proposed by the authority.

On Route No. 3, from West Point in Seattle to Bainbridge Island, the only change called for is a single 800-ft opening on the Bainbridge side, rather than the one 400-ft and two 500-ft openings.

No fault was found with the clearances proposed by the authority between Vashon Island and the Kitsap Peninsula at the Bainbridge end of Route No. 2 nor at the Seattle end of Route No. 3.

Navigation interests, at public hearings in August and September, were almost unanimous in voicing objections to all three routes. They demanded minimum clearances of 1,000 ft in any project and some thought Route No. 2 to be the least objectionable.

Wisconsin road plans

The Wisconsin State Highway Commission has announced a tentative 1954 highway improvement program costing over $43 million.

Projected improvements on state trunk routes covering 380 mi would cost $33 million and another $10 million would be for secondary roads.

City officials want to have direct dealings with Washington on federal aid work

American Municipal Association presents views before National Commission on Intergovernmental Relations

Provision for direct relations between cities and the federal government in connection with federal-aid programs for housing, hospitals and airports was urged by the American Municipal Association at its annual congress in New Orleans last week.

The AMA had an opportunity to make this recommendation directly to the President's Commission on Intergovernmental Relations at a hearing conducted by the commission at the closing session of the convention.

The commission was told that federal agencies should make more use of advisory councils of municipal officials in matters involving joint federal-municipal programs. Federal agencies, the AMA policy statement declared, should not assume that states can speak for their cities.

• **Civil defense scored**—Another AMA recommendation called for setting up a Division of Civil Defense in the Defense Department, staffed by experienced civilians who would deal directly with target area centers.

Mayor A. E. Cobb of Detroit criticized the federal government for not doing more to convince people that civil defense is a serious matter. He noted that Detroit has spent $1.8 million for civil defense, whereas the federal government's contribution to the city's program was only $600,000.

Gov. Frank Clement of Tennessee emphasized the need for "a single agreed-upon civil defense plan and adequate funds with which to implement it." He called upon the federal government to provide leadership.

However, at another session, Presidential Assistant Sherman Adams indicated that the federal government is ready to exert more vigorous leadership in civil defense. "There are under preparation at this moment," he declared, "plans for the delegation of authority to certain departments and officials of the government for carrying out actions of top responsibility in the civil defense field."

Adams said that details of the plan would be revealed at the White House conference of mayors on Dec. 14.

• **Redevelopment**—What slum clearance can mean to a city government in dollars and cents was the theme of an address by Public Housing Administration Commissioner Charles E. Slusser.

Slusser declared that public housing has meant—to cities that have it—payment of two dollars for every dollar previously collected in taxes from the slum sites. It also has been responsible for payment of delinquent taxes equal to a year's full tax levy on these same slum properties, he declared.

Instances where public housing has acted as a stimulus to adjacent property values were cited by the commissioner. In a Pacific Northwest city, there was a 112% increase in assessed land values in a 12-block area bordering one project; a 96% increase in land values in a 20-block area joining another project. In a California city, the housing authority acquired land for a project at a cost of $750 an acre back in 1942. Recently, a nearby lot sold at a value of $75,000 an acre and over the past 10 years the area within a one-mile radius of the development has shown a higher appreciation rate than any other residential area in the community.

Slusser viewed public housing as an investment that also pays municipal dividends by reducing expenditures for fire, police and health services in the areas. "Slum districts (about 20% of a metropolitan residential area) account for 45% of city service costs but only 6% of real estate tax revenues," he declared.

• **Streets and highways**—The AMA asked for a better deal on state and federal contributions for city street and highway work. A resolution declared that since state highway departments receive money from the federal government for streets and highways, federal legislation should be passed to make them give more attention to urban street and highway problems.

State highway departments receiving federal funds should be required to create urban road units to assist cities in meeting highway and street problems, contended Cheslie J. Senerchia, former mayor of Miami and chairman of the AMA committee on streets, highways and traffic.

• **Depression planning**—Although he stressed that the Administration does not expect a depression, Adams said that plans are ready should a need for expanding public works programs arise. "We are not going to trust to hasty improvisations, such as have ruled past practices," he added.

Declaring that major responsibility for providing highways, schools, hospitals, sewer and water facilities and the like rests with state and local governments, Adams said that these levels of government are giving increasing attention to developing plans for public projects "that could be gotten under way if private employment begins declining significantly." The federal government on its part, he said, is in a good position to move in a counter cyclical fashion in the construction areas for which it is responsible."

Mayor William E. Kemp of Kansas City, Mo., was elected AMA president, succeeding Mayor William B. Hartsfield of Atlanta. Mayor Allen Thompson of Jackson, Miss., was named vice-president.

Slum clearance case

Virginia upholds resale of condemned property to new private owners

The right of a redevelopment and housing authority to condemn private property even though part of it may be resold eventually to other private owners now has been upheld by courts in 13 states.

Latest ruling is by the Virginia Supreme Court of Appeals in reference to the Norfolk Redevelopment and Housing Authority. In its decision, the Virginia court pointed out that 32 states have enacted redevelopment legislation and that resale to private interests under restricted conditions had been held constitutional in 12. The court noted that only Florida and Georgia had held to the contrary but said that, in those cases, the entire areas were to be sold to private interests.

"In the case before us," the Virginia court declared, "the public use requires the taking of the whole area, including the property of the condemnees, for slum clearance purposes and a resale of a part for redevelopment purposes is merely ancillary to the main public use."

The opinion asserted that the law providing for the establishment of housing authorities in Virginia contemplates that in the course of a large slum clearance operation there will be some sections which will not be necessary, or suitable, for long-range use "and that after being purged of their unwholesome characteristics, they will be returned to a restricted private use."

The court declared, however, that such land as may be leased or sold to private enterprise should be "made subject to such restrictions and conditions as will carry out the purposes" of the slum clearance projects.

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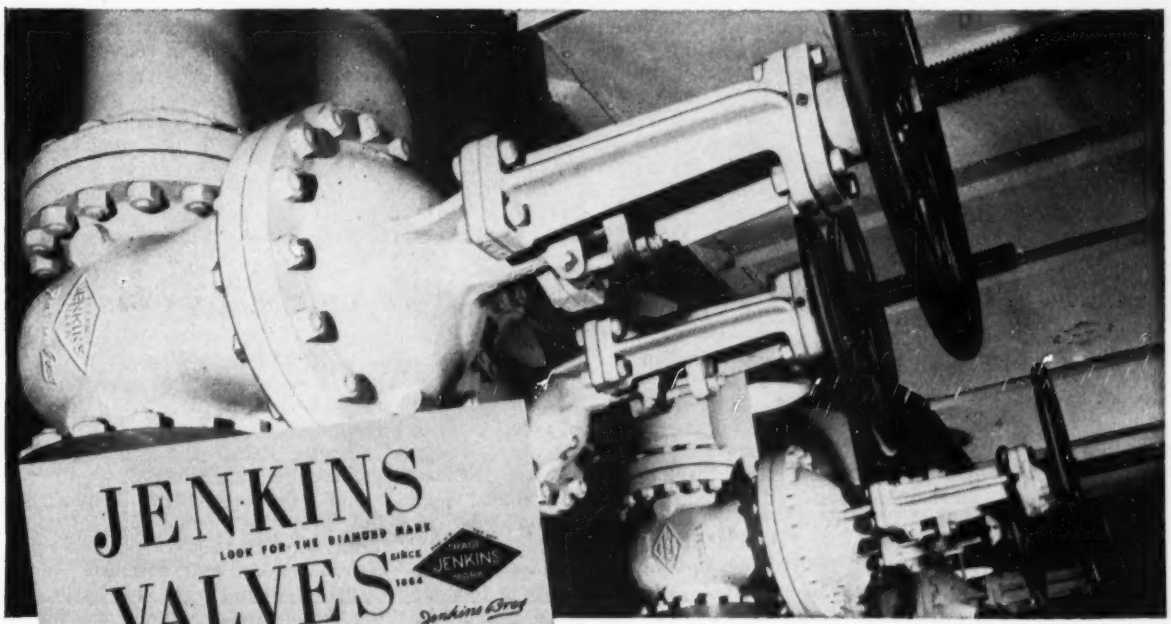

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Land and water-use issues are debated at three-day conference on resources

Many of the country's top experts on regional planning, hydro power, water pollution and other land and water-use problems were among the 1,500 representatives from industry, government and science who met last week in Washington as a "Citizens conference on resources for the future."

The conference was sponsored by Resources for the Future, Inc., a Ford Foundation research subsidiary, and was prompted by last year's report of the President's Materials Policy Commission (Paley Commission).

That was the controversial report which forecast shortages of key materials and recommended a series of proposals on such things as tariffs, subsidies, building codes to conserve building materials, and a comprehensive federal natural resources policy.

It was on this report and related natural resources issues that last week's conferees met. Over a period of three days, they gathered at 21 different discussion meetings on such problems as state vs. federal control of public lands and mineral resources, public vs. private power, stream pollution and dwindling water supplies.

• **Traffic problem aired**—A conference section on "Competing Demands for Use of Land" urged that urban redevelopment programs be improved to "give better balance to housing, business, and industrial uses." Among the important points brought out in the section's report:

• In fringe areas between city and rural land, serious conflicts can be expected. One of the most important is removing excellent farm land from production by subdivision into building lots—some times premature subdivision. How serious this loss of farm land will be to over-all crop production is still open to question.

• On the question of traffic congestion in central zones of large cities, there was general agreement that rapid transit does now and should in the future carry most of the people going to and from the downtown center; and that freeways and ample parking space are needed to handle motor vehicles that must come downtown. (see pages 21-23).

Also, that (1) the day of free parking in downtown areas is a thing of the past, and that parking meters encourage congestion more than they discourage it; (2) the parking business represents a highly competitive use of land and should be developed in large measure by private enterprise.

• Construction of water reservoirs brings about major conflicts in demand for land. Works of this sort take some of the best farm land out of crop production, so before such projects are undertaken, a thorough analysis should be made of net cost and other factors that have an impact on the local economy.

• **Water resouces issues**—Another conference section discussed water resource problems. It developed these points:

• Supply of water in the Southwest is generally less than present and foreseeable demands, but it will be possible to develop considerably more water at higher costs. Even in the East, where water supplies are more generous, industry and agriculture are beginning to feel pinches from air conditioning, added irrigation.

• Sharp differences of opinion arose on degree of water pollution control practices needed to maintain or improve quality standards in the nation's streams. Industry, municipalities, septic tank effluent in urban fringe areas, and denuded watersheds were pointed to as major sources of pollution. Professional conservationists said industry was not assuming its "proper share of the burden" in water pollution control. It was agreed that the basic objective of pollution control should be to maintain the use of the stream in the public interest—something that should be determined by a sound engineering evaluation followed by public hearings.

• Consequences of excessive drawdown of water tables in coastal areas, with consequent possibility of salt water intrusion and replenishment possibilities were discussed, also artificial ponding; using flood waters or sewage effluents; pumpage through wells; land management; over-irrigation; and importation of waters from outside sources. Discussion of regulating measures used in various states to conserve or regulate use of ground waters revealed that there was no uniformity in such regulations.

Another discussion section, on energy resources problems, generally agreed that it should be the policy of the federal government to encourage the fullest participation of private power companies in hydroelectric projects.

A sour note had been struck just before the conference started, when five public power lobby groups withdrew from participation in the parley. They charged that the conference was "stacked" in favor of corporate interests.

Illinois tests roadbuilding policies

Better riding qualities will be built into Illinois highways next year through the adoption of construction methods employed this year on a trial basis.

Some innovations also should result in lower construction costs, declared Robert H. Tittle, construction engineer for the Illinois State Highway Department, at the 16th annual meeting of the Illinois Road Builders Assn. in Chicago last week.

Major improvements, according to Tittle, will be the placing of concrete pavement without using side forms, surface vibration of the concrete, the sawing of contraction joints and more extensive use of sand drains to stabilize weak subsoils.

Five construction projects this year, on which Portland-cement concrete pavement was constructed without the use of side forms, have proved the practicability of this type of construction, said Tittle. On on job the contractor developed a self-propelled machine that vibrated and finished a 24-ft pavement at the rate of 3 fpm.

The concrete was mixed and dumped ahead of the machine by a conventional paving mixer and the finishing machine produced a 10-in. slab with vertical sides. The machine mounts 30-ft steel runners that slide along each side of the pavement. The low-slump concrete remains in contact with, the runners for about 10 min, resulting in the edges of the pavement remaining straight and vertical after the machine has passed on.

Full-scale experiments conducted this past construction season, said Tittle, show that surface vibration will consolidate a 10-in. pavement adequately to its full depth, and facilitate the finishing of low-slump concrete.

The sawing of transverse contraction joints will be done more extensively in 1954. **Tittle said joints** were formed in this manner on 23½ mi of new U. S. 66 paving this year—providing improved riding qualities.

Another new policy being tried experimentally by the Illinois State Highway Department provides for giving bridge contractors additional compensation for continuing their work throughout the winter to avoid delaying construction of adjacent pavement the following season—additional compensation to cover the cost of concreting in cold weather.

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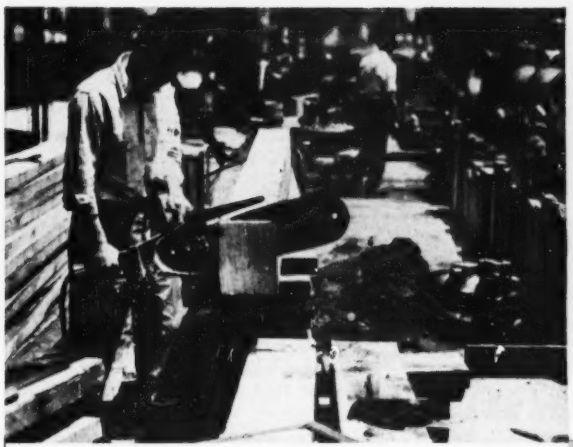

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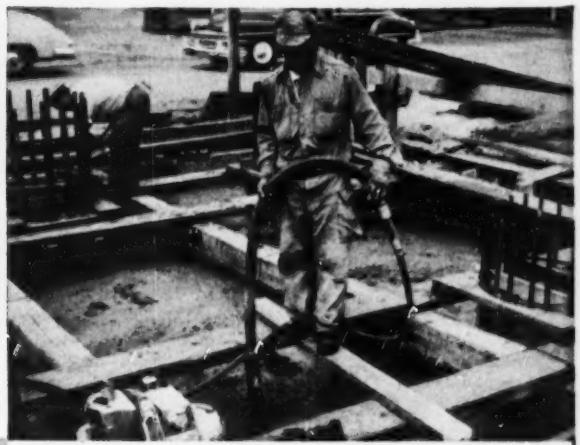

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Photo by Archer

HEADS TOGETHER—In final talk before signing unique contract (left to right) Efrem Kahn, chairman of Joint Industry Board of the Electrical Industry; Harold Webster, president of the New York Electrical Contractors Assn.; Harry Van Arsdale, head of Local 3, IBEW, and Armand D'Angelo, Local 3 recording secretary. Back to camera is that of Denis J. Crimmins, executive secretary of the joint board.

New wrinkle for construction: annuity plan is established for electricians

For weeks there had been rumors of a "hold-the-pay-line" agreement in the making between electrical contractors and electrical construction workers in New York City. Employers and labor alike had wondered what new benefits—if not higher pay—Harry Van Arsdale, Jr., could get for his 6,000 construction members of Local 3, International Brotherhood of Electrical Workers, long known as pacesetters of fringe benefits.

Van Arsdale did not disappoint. He came up with a new wrinkle:

At a press conference—in itself an oddity since New York's seven major newspapers were not published because of an engravers' strike—Van Arsdale and the electrical contractors signed a two-year contract providing for a $20-a-week payment ($15 by employers, $5 by the men) to an annuity fund for each employee.

Reaction varied from glee among members of Local 3 to some consternation among general contractors and other specialty contractors.

New York's electrical contractors, long since adjusted to the complete type of unionism for which Van Arsdale has become a symbol, appeared satisfied with the annuity plan.

• **The wrinkle**—Here's how the annuity works:

For each week during the next two years that an electrical worker is employed, his employer will pay $15 into the annuity fund. The worker will put in $5 a week. After Jan. 1, 1955 the beginning of the second year of the annuity agreement, an electrical worker who is unemployed, disabled or ill can draw $25 a week from the fund against the amount he has in his account.

The weekly unemployment payments will supplement state unemployment compensation or disability benefits, whichever the worker is getting. In addition, the annuity plan has the effect of increasing Local 3 members' life insurance protection from $3,000—where it's been since 1926—to $5,000.

There were other changes in the new contract, concerned mostly with revisions of hospitalization payments and limits on interest-free loans with which workers can reduce mortgages or buy cars.

• **Employer gains negotiated**—Electrical contractors won some benefits under the contract, too. For 10 years IBEW contracts in New York have been administered by the Joint Industry Board of the Electrical Industry. The board, made up of 10 representatives each from labor and management, has handled funds for the many benefits won by Local 3 and has acted as a round table for settlement of day-to-day problems of the city's electrical construction industry.

Expenses of running the joint board have been borne by employers, and this year the administration fund showed a surplus. So, the contractors won—after negotiation with Local 3—permission to buy a $10,000 life insurance policy for each of two principals of each member firm, and permission to pay state disability fund assessments from the fund instead of from their pockets.

• **Why annuity?**—Electrical contractors—like others—figure labor costs at an hourly figure, and they aren't especially concerned whether the cost is in the form of wages, welfare benefits or payments to various types of funds.

Several months ago Van Arsdale and the contractors arrived at a 10% increase in electrical labor costs for the next two years. Instead of taking the increase in the form of wages, Van Arsdale looked for some type of benefit that would have the overtones of security.

There was another angle to be considered: A 10% wage increase from the present rate of $3.30 an hour would be about 33 cents. But, before this could be added to a worker's paycheck it would have to be reduced by about 8 cents to cover the mandatory payments—Social Security, etc.—which the raise would necessitate.

Compression of the annuity payments into two years was done, according to Van Arsdale to enable older electricians to cash in on the benefits as soon as possible.

Aware of the growing "[illegible]" in many employer-union relationships in the handling of welfare funds, Local 3 and the electrical contractors are boosting membership in the joint board to 12 from each side and will seek appointment by a federal court of a public member to act as a watchdog.

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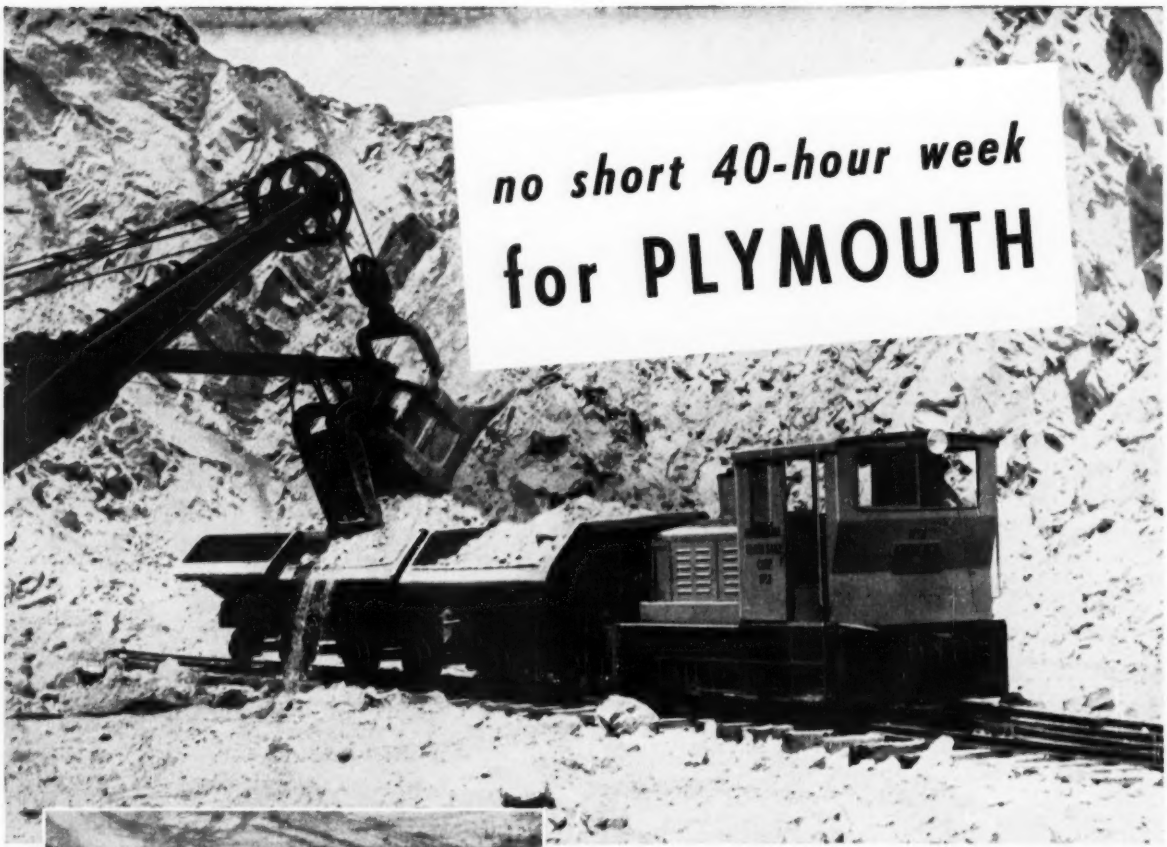

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Rugged Plymouth Locomotives haul Quartzite Rock 144 Hours per week

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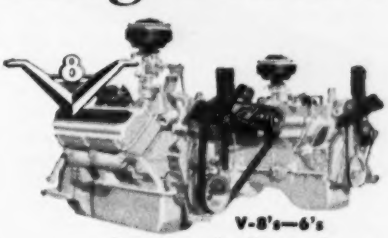

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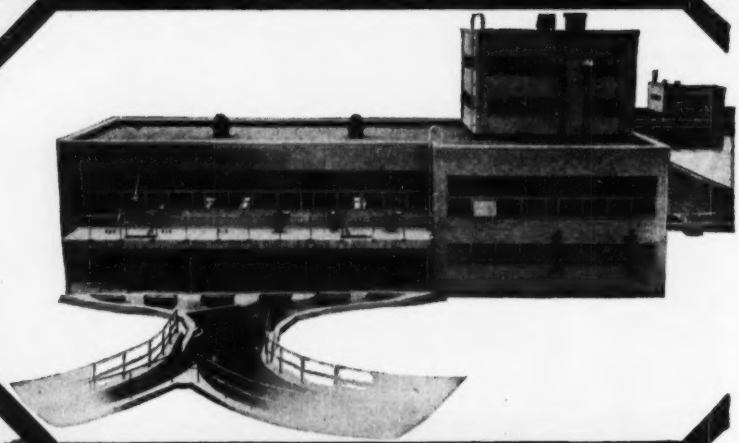

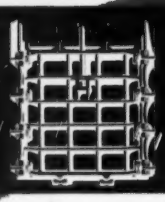

Rodney Hunt cast iron bronze-mounted sluice gates are used throughout this modern sewage treatment plant at Bucklin Point, East Providence, R. I. Here, there are Rodney Hunt gates 96 x 96, 84 x 96, 60 x 72, 48 x 72, 36 x 24, 24 x 36, and 24 x 18; wall thimbles are in place for 19 more gates in sizes up to 96 x 120 to be installed as need arises.

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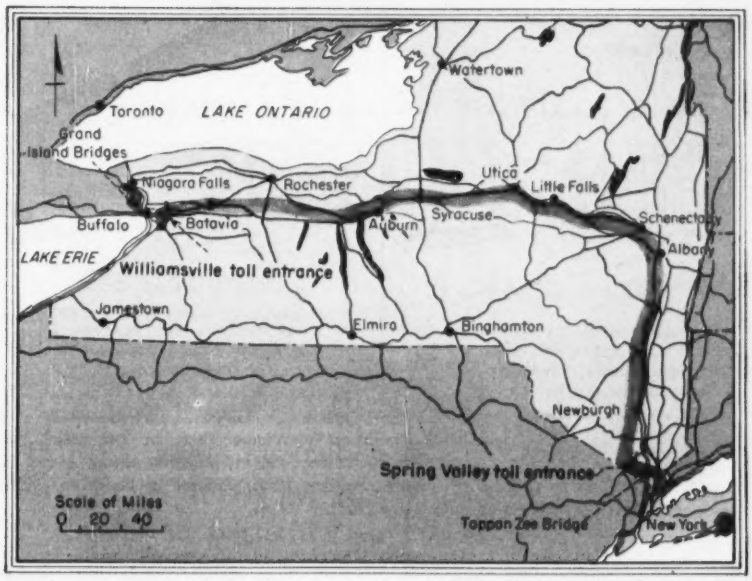


TOLL COLLECTION on 395 miles of New York Thruway—between Williamsville and Spring Valley—will be controlled by trip tickets; remainder will have barrier stations.

Thruway toll equipment cross-checks operation

People who do any thinking about toll-collection problems have been wondering for three years how the New York Thruway Authority is going to handle flat-rate annual permits along with a system of trip fares like those of the Pennsylvania and New Jersey turnpikes.

These people saw the annual permit as an added variable that could multiply the opportunities for human error or deliberate fraud. Or else the toll-collection equipment would have to be more complex and expensive than any previously devised.

Thruway equipment will be more complex, to be sure—it even includes a camera that photographs cars as they go through toll stations—but the authority believes that the extra money will be well spent.

Cost of toll-collection devices is $2.5 million, about a half percent of the thruway's overall construction cost. There will be 35 points between Williamsville and Spring Valley, at all of which entry tickets will be issued and exit fares will be collected. In addition there will be three barrier points outside this zone, where classified flat fees will be collected. (One is at Tappan Zee Bridge.) This is a larger number of collection points than on any other turnpike yet built.

During 1955, the first full year of operation, 34,000,000 vehicle-trips are estimated. Revenues are expected to increase from $19 million to $35 million in ten years. The growing bulk of income will come from commercial vehicles, the proportion in this category being estimated at 62% for the first year and 72% ten years later.

An obvious reason for the high percentage of truck and bus revenues is the high unit fare for the bigger types—as much as five times the passenger-car rate.

• **Permit a bargain**—The annual permit, signified by a sticker on the vehicle, will be available (probably for $10) to residents of New York State. It will be a second important reason for the high percentage of commercial revenues, or rather for the low proportion of passenge-car income, because of its unusual value. A commuter traveling 50 miles every working day would get $10 worth of thruway travel in less than a month, for instance. The fare-paying ticket holder will pay about a cent a mile for his passenger-car trip.

Tickets, however, will be carried by permit-holding and fare-paying vehicles alike during trips on the thruway. It might seem pointless to control permit vehicles, because no money changes hands in those transactions. But it is easy to imagine a dishonest toll collector pocketing a reduced fare from a friend's revenue vehicle, calling it a permit vehicle.

• **Entry booth**—On the New York Thruway, the agent in the entrance booth visually classifies each vehicle as to type, weight and number of axles, pressing the corresponding button on his ticket-issuing machine. This machine then issues a serially-numbered trip ticket, with the vehicle's classification, the place, date and time of the transaction, and the collector's identifying number, printed and punched on it.

At the same time, all information is transmitted automatically to a remote recording machine located in the toll plaza's administration building. Each toll lane at the plaza has its own remote recorder, which keeps a record of all the lane transactions.

The trip ticket is handed to the driver, and as he enters the thruway his vehicle passes over a treadle embedded in the roadway alongside the booth. This treadle electrically counts the number of axles on the vehicle and transmits this count to the remote recorder. (It also differentiates between forward and reverse movements, by a system of sequential electrical contacts.)

The number of axles recorded by the treadle must agree with the number indicated by the classification button pushed by the collector. This is a check on the entry agent's accuracy.

• **Exit booth**—At the thruway exit the driver hands his trip ticket to an exit collector. The ticket is inserted in a "validating" machine, which automatically computes the proper toll from the punched holes in the ticket, showing the fare due in a window on the front of the validator. The collector then accepts the fare.

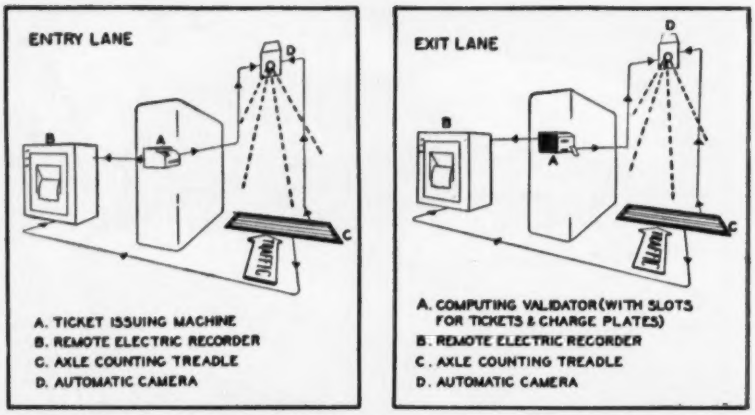
The validator, in addition to computing the fare, transmits the information concerning the transaction to the remote recording machine: The classification of the vehicle, the time, date and place of the transaction, and the identifying number of the collector. In addition, the amount of the toll is added to an automatic cash totalizer, which constantly shows the grand total of money taken in by the collector during his tour of duty.

On leaving the thruway, the vehicle again goes over a treadle which pulses the axle count to the remote recorder. As at the entrance point, the number of axles indicated by the classification must agree with the number recorded by the treadle.

The automatic cash totalizer reduces the paper work involved in auditing collections, and also removes an incentive to short-changing. An agent on duty never knows what his total should be, because there is no cash totalizing device of any kind in the toll booth itself. This record, like the others, is kept in the remote

recording machine in the toll plaza's administration building, and the collector has no access to it.

Detail transaction recording, to be used for collector surveillance, is another feature of the remote recording machine. Normally each lane's remote register prints out on a 12½-in. wide tape only hourly totals and summaries of lane transactions, at the beginning and end of an agent's tour of duty. (Meanwhile the counters tick away as information is pulsed in.) But an inspector may set the recorder so that it logs every transaction as it occurs. This detail log can then be compared with a series of pictures taken by the lane camera.


ENTRY LANE
A. TICKET ISSUING MACHINE
B. REMOTE ELECTRIC RECORDER
C. AXLE COUNTING TREADLE
D. AUTOMATIC CAMERA
EXIT LANE
A. COMPUTING VALIDATOR (WITH SLOTS FOR TICKETS & CHARGE PLATES)
B. REMOTE ELECTRIC RECORDER
C. AXLE COUNTING TREADLE
D. AUTOMATIC CAMERA

LANE EQUIPMENT—For each toll lane at an interchange there are four major units of equipment. Arrows show where electric current carries impulses: From treadle to camera shutter and to counter in remote recorder; from machine in booth to camera mechanism and to totalizers in remote recorder.

• **The camera**—The outstanding bit of original thinking in the thruway toll-collection system is the camera to be used for checking, which still was being developed this fall when models of the other devices were demonstrated to thruway officials at the factory of the toll-collection system's contractor. However, a rough working model had been completed. Its most intriguing feature is an electric-eye-actuated aperture that gives the camera correct exposure continuously as light conditions change throughout the day. Night exposure will be constant for flood-lighting.

Basic photographic units will be 16-mm movie cameras, set to take one frame at a time. Mounted in every entry and exit lane, to photograph fronts of vehicles, they will be controlled only by the inspector. He can schedule a variety of sequences.

Examples might be: Every vehicle; every passenger car; every permit vehicle; or every one at set intervals.

When a car or a truck to be photographed enters the toll lane, the pushing of the classification button by the agent cocks the camera mechanism. As the vehicle rolls over the treadle, the picture is snapped. The ticket machine in the booth then transfers to an unexposed portion of the film the exact time and the date, the registered axle count, and the transaction serial number.

Comparison of the film strip with the sequentially numbered trip tickets, or with the detail transaction records, allows an inspector to spot any variations from proper procedures.

In case of permit vehicles the film itself can tell the story. When the agent pushes the "permit" button on the ticket-issuing machine, or inserts a permit ticket in the exit validator, a "permit" notation is made on the film itself. An inspector can then tell by examination of the film if any permit vehicles have been misclassified, for each one must display its sticker.

• **Charge accounts, too**—Another kind of sticker identification, to be seen on commercial vehicles, will require a charge transaction. Trucking companies may establish credit with the Thruway Authority, in which case their drivers will carry charge punch plates. When a driver presents his trip ticket at the exit he also will present his charge plate, which will be inserted in the validator along with the ticket. The driver will get a printed acknowledgment of the transaction and the owner will be billed.

• **Agent identification**—In order to fix the responsibility for transactions, collectors and maintenance men "key in" and "key out" when using booth equipment. Each collector has two keys. When he begins his shift he activates the toll equipment and turns the lane traffic light from red to green with one key; then unlocks the equipment with the other. The collector's identifying number is engraved on both keys. This number is printed on the tickets issued or validated by him, and is included with the information registered in the remote recorder.

Each maintenance man has one key, which permits him access to the machinery while leaving the lane inoperative. The key actuates the remote recording device, causing it to print the time, when the maintenance man begins and ends his work, along with his identifying number, and the lane transaction totals.

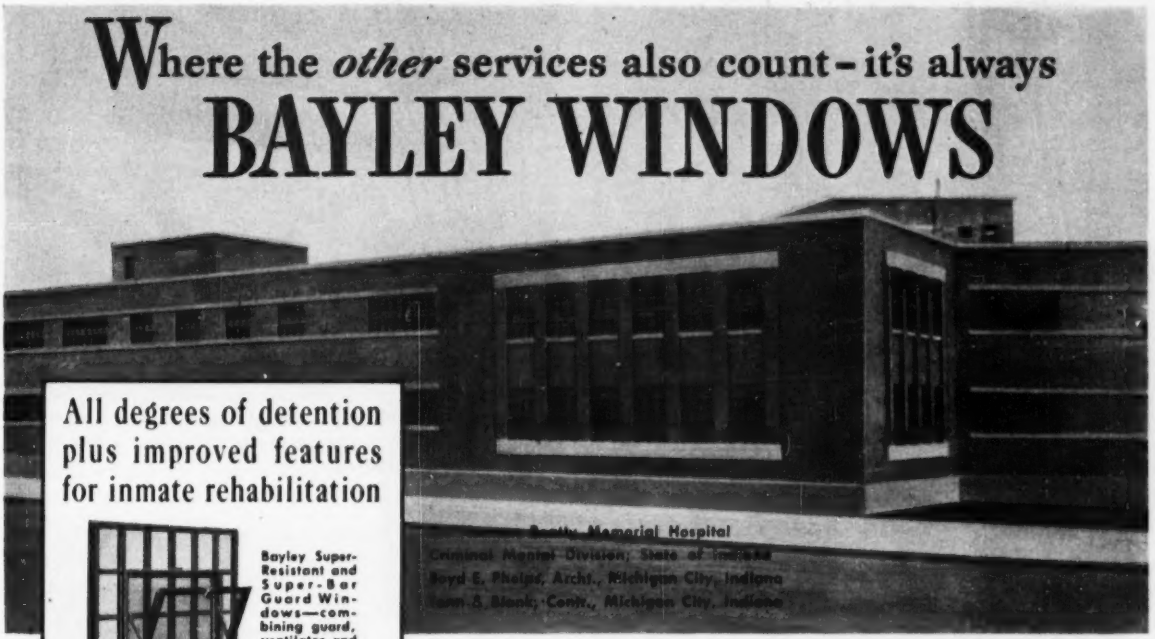
Contractor for the New York Thruway toll-collection system, including toll-both structures, is Taller and Cooper, Inc., Brooklyn, N. Y. This firm designed and is manufacturing the equipment.

(This is the third and last article of a series on the Thruway. Previous articles appeared July 2, p. 38 and July 16, p. 51.)

Cash Passenger	Commercial Tickets	Permit Vehicles	Indicated Axles	Extra Axles	Treadle Forward	Axles Rev.	Intchg.	Day/Yr.	Hour	Min.	Collector Number
7986	3092	1244	2746	88	0463	36L4	24	371	0	18	58	069
7986	3091	1244	2743	87	0400	36L4L4	24	371	0	18	56	069
7986	3091	1243	2741	87	0458	36L4L4	24	371	0	18	56	069
7986	3090	1243	2736	85	0454	36L4L4	24	371	0	18	56	069
7986	3089	1243	2733	84	0451	36L4L4	24	371	0	18	56	069
7986	3088	1243	2731	84	0449	36L4	24	371	0	18	56	069
7986	3087	1243	2728	84	0447	36L4	24	371	0	18	56	069

REMOTE RECORDER TAPE is 12½ in. wide. When the recorder is set to detail all transactions it prints information as shown above (entry lane recorder). Otherwise it prints only every hour and when an agent begins or ends his tour of duty.

Where the *other* services also count – it's always BAYLEY WINDOWS



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Boyd E. Phelps, Archt., Michigan City, Indiana
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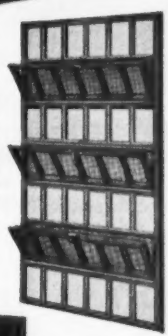
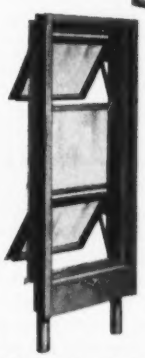
Bayley Super-Resistant and Super-Bar Guard Windows—combining guard, ventilator and screen in one unit.



Bayley Intermediate Psychiatric Windows — with projected-in ventilators and screens operated by separate key-locks.



Bayley Psychiatric Awning Projected "PAP" Windows with projected-out ventilators. (Inside detention or protection guard screens, available.)

Other types also available. Write for recommendations and complete catalog data.

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See Bayley in Sweet's. Complete catalogs on aluminum windows, 16a/Bay; steel windows, 16b/Ba; Hospital Detention Window, 16b/Bay.

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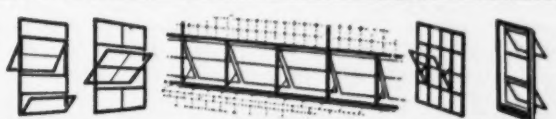

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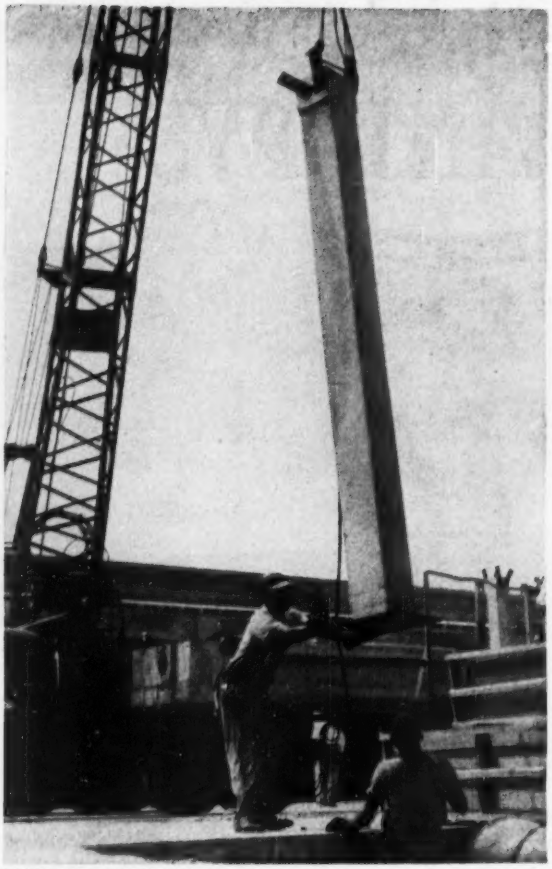
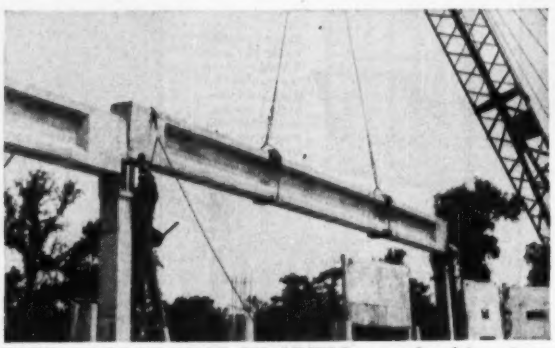


PRECAST COLUMN for one-story factory in Houston, Tex., is equipped with base plate—welded to reinforcing—for direct placement on anchor bolts set in floor slab.

PRESTRESSED PRECAST BEAMS are bolted with steel ties to column tops. All precast elements of 64,000-sq ft factory are of expanded-shale concrete.



PRECAST ROOF DECK CHANNELS were placed in pairs as soon as girders were bolted in position. Only one crane and an 8-man crew were needed to erect the big structure.

Assembly-line precasting, erection yield 10,000 sq ft of factory daily

Ralph C. Hilton & Bennett Coulson
Consulting Engineers
Houston, Tex.

Eight men and a crane were all that were needed to erect a 64,000-sq ft reinforced concrete factory at the rate of 10,000 sq ft per day in Houston, Tex. A continuous flow of columns, girders and roof deck channels from a precasting plant five miles away, was fed to the crane—operating right on the floor slab where the trucks delivered the structural elements.

A one-story building, with 6-in. wire-reinformed concrete floor slab on ground and spread column footings, the $735,000-structure is made of lightweight expanded-shale concrete. Aside from the cast-in-place floor slab, only the tilt-up wall panels and pilasters for the factory were cast at the site.

The girders, the only prestressed members in the building, represent the first major use of an anchoring method still new in the United States.

• **Manufacturing concrete units**—At the precasting plant, structural elements were cast and stored in the order in which they would be needed for the continuous erection of the factory. Trucks picked up the units—assorted in sequence of erection—and delivered them to the building site at a predetermined rate. This system not only eliminated the need for any storage of structural elements on the site, but also reduced the demand for on-the-job labor. The eight-man erection crew was made up entirely of ironworkers.

• **Lightweight, modular**—Designed to fit a modular specification of 20x40 ft, all the precast structural elements of the factory were made of the lightweight expanded-shale concrete to reduce the weight of the building. Trucking economy and reduction in foundation size were significant results of the use of the lightweight concrete. Soil conditions on the site made it advisable to provide for moderate shifting of the ground without sacrificing structural strength. In the design, expansion joints were placed at all points of contact between precast elements.

Measuring 1x1x15 ft each, the reinforced concrete columns were precast in rigid steel forms with the column base plate welded to the reinforcing. Anchor bolts, set in the factory floor slab with nuts turned down to the proper elevation, held the base plates in position during column erection after which the plate was grouted in. Roof deck slabs, shaped like channels, measure 20 ft long by 2 ft wide with a 9-in. flange depth.

Erected in pairs, the roof deck channel has notched flange ends to fit snugly on the girders. The columns, roof deck channel, and 20-ft long joists—between columns at the wall line—have a concrete cube strength of 4,000 psi.

• **Prestressed lightweight concrete**—Made of the same lightweight expanded-shale concrete as the other structural elements in the factory, the precast girders are the only prestressed members in the building. With a concrete cube strength of 7,000 psi, the 40-ft long by 30-in. deep by 14-in. wide girders are designed to carry, in addition to dead load, a 750-lb crane at any point in the building. The girders were stripped of their metal forms 24 hours after pouring and then were placed in a special curing yard for 7 days. Post-tensioning the prestressing wires—in cast-in-place metal duct tubes—was carried out after the 7-day curing of the girders. Each prestressing cable was made up of ten ¼-in. dia steel wires.

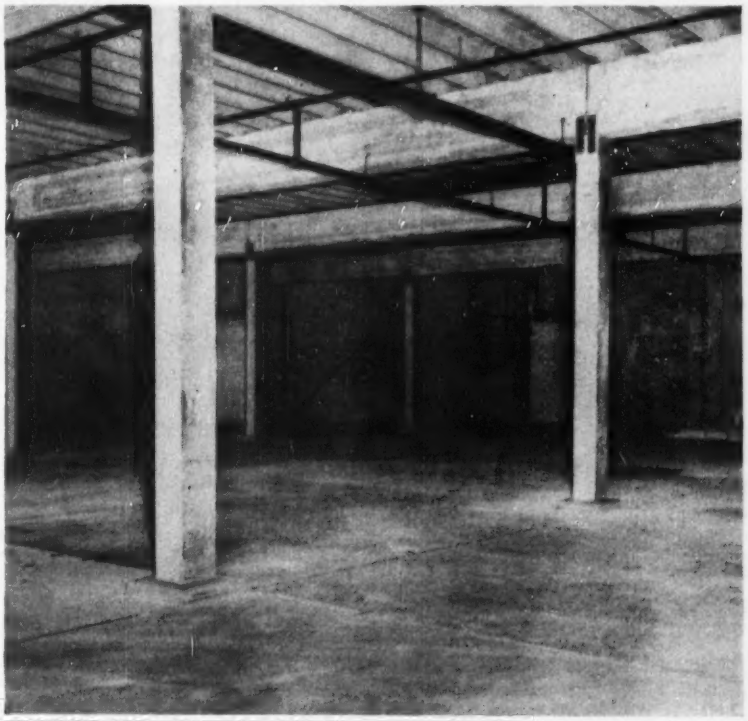
Anchored at one end of the girder, the prestressing wires were post-tensioned from the other end. The method used is under license of BBR, Zurich, Switzerland. In this method, button-heads are cold forged on both ends of each prestressing wire. At the anchor end of the girder the wires are held by the button-heads against holes in a steel plate through which the cables pass. At the tensioning end of the girder the cables are held in a similar fashion, but the steel plate has a threaded hole in its center to take a threaded jacking bar. This jacking plate is recessed about 10 in. inside the end of the girder. The jacking bar runs through a bearing plate, and when the wires are stressed, a nut is run down on the bearing plate to anchor the stressed wires. The cables are then grouted in and the end of the girder finished off flush with concrete.

• **Low insurance rates**—The non-combustible nature of the factory was such that Houston issued a building permit approving construction without fire walls or sprinklers. However, the owner desired sprinklers and these were set in the finished structure with a powder-actuated tool. The addition of sprinklers to the building made possible the lowest insurance rate Texas allows—$30 per $100,000 valuation (conventional concrete and exposed steel structures in the area can have rates as high as $150 per $100,000).

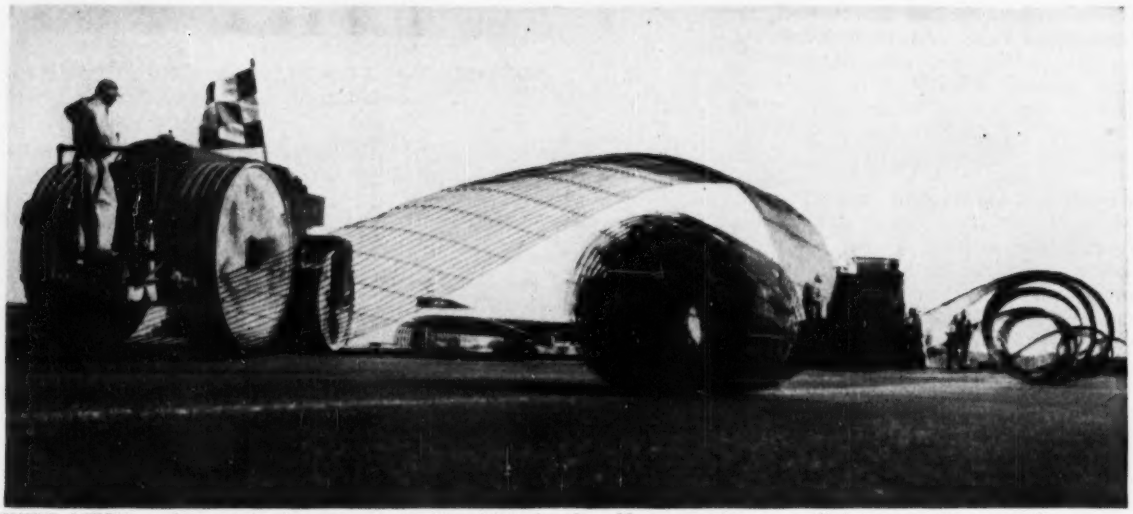
The plant is to be heated with 12 ceiling-suspended radiant gas heaters. To keep the plant cool in summer, the high insulating properties of the expanded shale concrete will help 14 exhaust fans that can change the total air volume in the building every four minutes.

CONTINUOUS FLOW ERECTION of the building was achieved with trucks delivering precast units in sequence of erection to the crane operating on the factory floor.

Morris Kruger, Houston, built the factory for the Kay Manufacturing Corp., and Geo. Rackle & Sons, Houston, was the precast concrete manufacturer. Engineers for the building design were the authors.



FINISHED JOB utility and sprinkler lines were anchored to the concrete with a cartridge-actuated tool, to eliminate inserts in the precasting stage.



WIRE MESH used as reinforcing over construction joints in the old pavement was unrolled transversely across the runway ahead of the work of laying the bituminous surfacing.

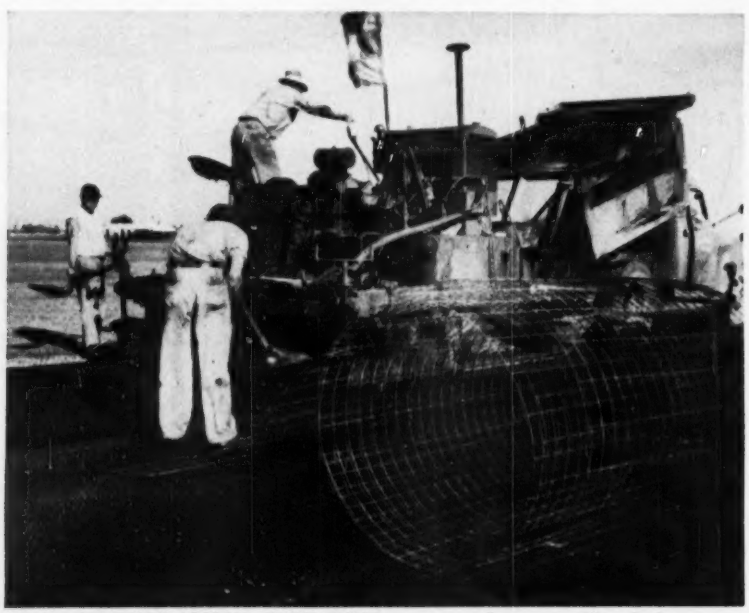
Welded wire reinforcing added to airfield paving

Welded wire fabric was added to bituminous paving at the Indianapolis Airport this fall when new surfacing was applied to the old concrete pavement. Mesh was laid only over the transverse expansion joints in the hope of keeping large cracks from developing over those joints.

This is believed to be the first time that wire mesh has been used for that purpose in air field paving. It has been tried in highway work, a recent application having been described in ENR Nov. 5, p. 23.

Unlike most of the highway applications, where the mesh was laid directly on the concrete, the mesh at Indianapolis was placed between two layers of bituminous material.

The old concrete was laid in 1931 and was designed for 20,000-lb gross loads. It was 6 in. thick and reinforced with welded wire fabric. In recent years that pavement has carried successfully loads up to that of 94,000-lb Constellations.



THE TOP BITUMINOUS SURFACING was started at one side of the runway where the end of the mesh was stapled to the base course at its outer edge. Beyond that point, mesh could be held down by men standing on it while the paver passed.

Only 120 sq yd of a total of 29,000 had to be replaced when resurfacing was undertaken, and as that broken concrete was being removed, two sections were found to be without mesh.

Transverse expansion joints in this pavement are spaced at 40-ft intervals. Many were as much as 1¼ in. wide at the time the new surface was applied.

First step in the resurfacing was to apply and roll a 1¼-in. thick layer of bituminous material over the full 104-ft width of the runway for the entire 2,500-ft length of the project.

Mesh then was applied over most of the joints, using rolls 5-ft wide, which were unrolled as work progressed across the runway. For purposes of comparison, no mesh was laid over a few joints. Cracks have begun to form over joints in those areas.

The location of all joints was marked by stakes at the runway edge, and joints without mesh have been indicated on these stakes.

The mesh is No. 10 gage, with wire spaced 3-in. longitudinally and 6 in. transversely.

Wire staples were used to secure the outer end of each strip of mesh to the asphalt surfacing, but after the first pass of the paver, it could be held down by men standing on the free end of the strip just clear of the paver.

The top bituminous material also is 1¼-in. thick. After it had been laid and sealed, hot limestone chips were applied at a rate of 15 lb per sq yd.

This work was carried out under the direction of P. H. Roettger, manager of the airport.

A new dam in half the required time.....

with the help of a

McKIERNAN-TERRY PILE HAMMER

(At top) New Zanesville Dam nearing completion, with the last cell in midstream being filled with concrete and remaining closure arc piling being driven by McKiernan-Terry Pile Hammer.

(In circle) Close-up of McKiernan-Terry No. 7 Double Acting Pile Hammer driving piles for one of the circular cells.

Zanesville, Ohio, needed a new dam—fast. The city's timber crib dam had failed, causing a drop in the water table of the municipal water supply and trouble upstream.

Dravo Corporation received a contract to build a new dam in 100 days—but they completed the work in 52 days—practically half the allotted time.

A McKiernan-Terry No. 7 Double-Acting Pile Hammer helped on this construction job by driving about 1500 steel sheet piles to bedrock for the concrete filled cells and closure areas which formed the dam.

Here, as in hundreds of other construction jobs on which speed as well as economy is important, a McKiernan-Terry Pile Hammer helped the contractor to better a desired performance.

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Available in a variety of designs and in capacities of 300 to 1500 tons per hour. Exceptional durability proven by installations in service for half a century. Simple controls afford convenient, comfortable and speedy operation

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HONING UP TO 42-IN. I.D. X 55-FT. LONG

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MK 220

Traffic-stopper . . . sales-builder! This 100 x 160-foot Butler building gives the Shult Implement Company, El Campo, Texas, a sales "showcase" with permanent, low-cost space for displays, offices, parts and service departments.

This main street beauty is a "showcase" BUTLER steel building

Traffic slows as drivers take a second look. Folks on foot pause to browse and stay to buy. The cash registers never seem to stop "talking." Yes, the eye-catching beauty of this modern store—that's a Butler steel building at heart—does more than tickle the owner's vanity. It actually increases store traffic—sales and profits!

You, too, can profit by doing business in a building that's an attractive "showcase" for your merchandise. You don't have to be made of money, either. You can get costly custom-built beauty at mass production prices by combining a regular Butler building with wood, masonry, and glass. Your architect can economically create the individuality that coaxes more customers inside.

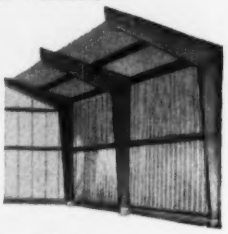
Butler buildings provide post-free interiors for shops, stores or offices that are 100 per cent usable. They can be economically heated—insulated for year-around comfort. Insurance rates are low.

You don't need a big bankroll to own a beautiful shop or store, tailored to your individual needs. Write today for full details and the name of your nearby Butler dealer!

Here is why BUTLER is a better buy

Every Foot of Floor Space is Usable

There are no interior posts or columns to waste space and create work-slowing "bottlenecks." Rigid-frame construction also shrinks maintenance costs . . . extends building life.



Fast Erection . . . Easy Expansion

Precision-punched and dimensioned bolt holes speed erection—simplify expansion or dismantling and moving. Galvanized bolts, with Neoprene rubber washers, lock deep-corrugated sheets firmly to the sturdy frame.

Weatherproof Protection

The one-piece, die-formed roof ridge eliminates ridge roll—helps to make the building leakproof and weather-tight.

Triple-Strength Corrugated Sheets

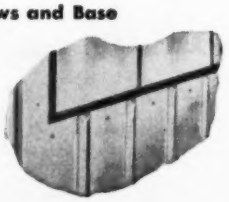
Butler sheeting, with deep-drawn corrugations formed on 12-inch centers, is three times as strong as ordinary corrugated sheets. Overlapping corrugations bolt tightly together for maximum strength and weather protection. Available in steel or aluminum.

Attractive Curved Eaves

The neat, die-formed eaves—which bolt to the roof sheets—add to the appearance of Butler steel buildings...increase the strength of the eaves . . . help insure weather-tightness.

Weather-sealed Windows and Base

Where corrugated sheets meet windows or the foundation, they are tightly crimped for a snug fit that keeps out snow, moisture and rodents.



BUTLER STEEL PRODUCTS

BUTLER MANUFACTURING COMPANY

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FIRST NUCLEAR POWER PLANT successfully generated electricity in December, 1951. Continued research at the National Reactor Test Station's experimental breeder reactor has since then developed valuable data on "breeding" of fissionable material that has an important bearing on the future construction of such units for commercial power generation.

Building the AEC reactor test station

Quietly and with little fanfare, the Atomic Energy Commission has invested nearly $100 million over the last four years in facilities at its National Reactor Testing Station in eastern Idaho. These facilities will have a marked impact on future nonmilitary use of nuclear fission—particularly on the design and construction of nuclear power plants and nuclear powered transport.

The nature of the work at NRTS has lead to marked differences in the development program there from other AEC installations. These factors stand out:

- There is no government town.
- There have been no labor troubles.
- Major work has been divided among several design firms and several construction firms rather than lumped into one big job.
- On all work there have been separate contracts for design and construction.

The National Reactor Test Station was established for full-scale research and development work on nuclear reactors that scientists believe will power the electric generating plants, ships and aircraft of the future. It is located on 439,000 acres of sagebrush plain 40 miles west of Idaho Falls.

At present there are four units in operation (the experimental breeder reactor, materials testing reactor, submarine thermal reactor, and chemical processing plant) and one under construction (aircraft nuclear reactor testing facilities).

No additional program has been announced, but space is available, and when new nuclear developments get to the prototype stage there is substantial likelihood of additional construction at the Idaho installation.

In general, development of a major facility at NRTS follows a pattern like this:

Research at one of the national laboratories such as Argonne, Brookhaven and Oak Ridge develops overall criteria for design of a reactor or processing plant. The unit is assigned

THESE FIRMS BUILT REACTOR TEST STATION UNITS

	Contractors			Cost	Initial
	Design	Construction	Operation	(millions)	Operation
Experimental Breeder Reactor	The Austin Co., Cleveland, Ohio	Bechtel Corp., San Francisco	Argonne National Laboratory	$6	Fall, 1951
Materials Testing Reactor	Blaw-Knox Construction Co., Pittsburgh	Fluor Corp., Los Angeles	Phillips Petroleum Co. Bartlesville, Okla.	$18	Spring, 1952
Submarine Thermal Reactor	Rust Engineering Co., Pittsburgh	F. H. McGraw Co., Hartford, Conn., M. J. Brock & Sons, Los Angeles, Electric Boat Co., Groton, Conn.	Westinghouse Electric Corp.	$26	Spring, 1953
Chemical Processing Plant	Foster-Wheeler Corp., New York, N. Y.	Bechtel Corp., San Francisco	Phillips Petroleum Co. Bartlesville, Okla.	$34	Spring, 1953
Aircraft Nuclear Reactor Testing Facilities	Parsons Co., Los Angeles	Phase I—Utah Construction Co., San Francisco; Phase II—not awarded	General Electric Co. and others to be chosen	(not available)	under construction

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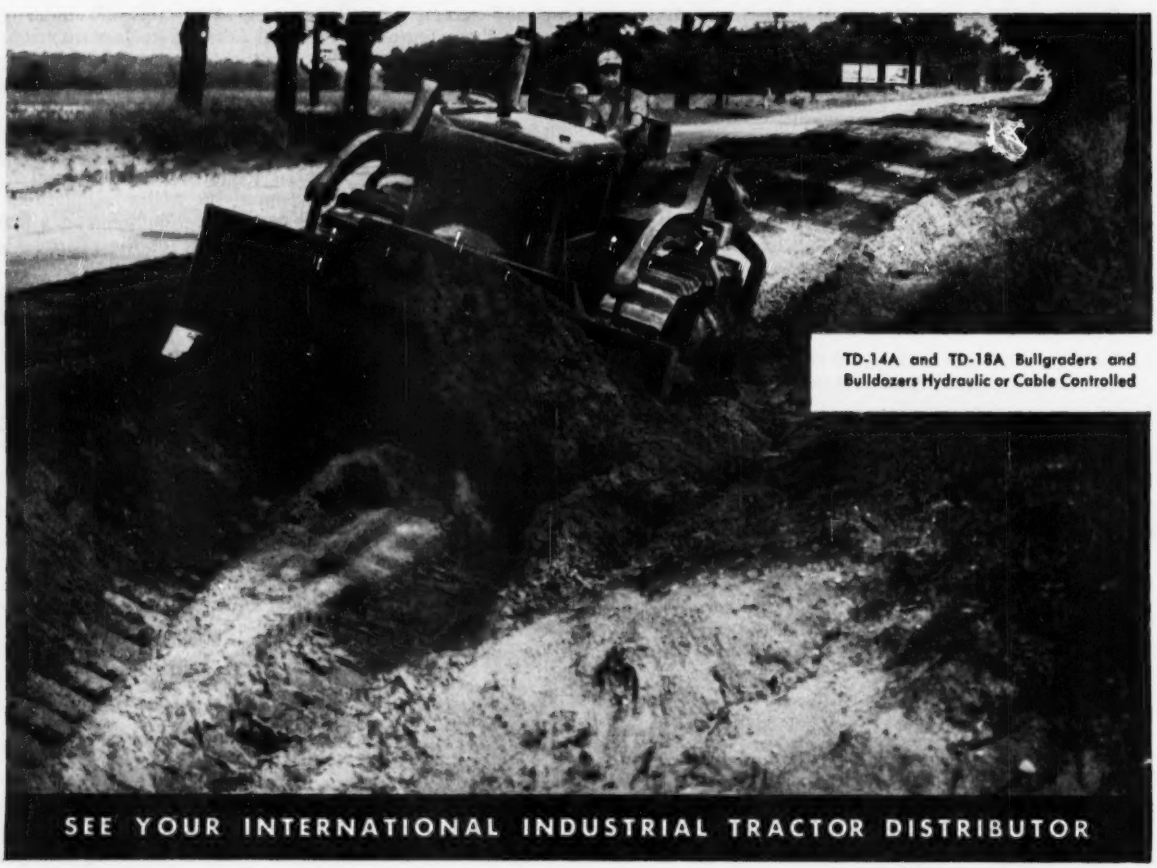
WHAT IT DOES . . . It means that the tractor retains all of its original tractive effort and maneuverability. It puts maximum driving force where it belongs — at the blade. Because there is always a full length of track on the ground, you take full advantage of tractor power and get fine, accurate control over the blade. Finally, there is less wear and tear on the tractor.

HOW IT CUTS ROADBUILDING COSTS . . . Better blade control and tractor maneuverability enables operator to produce accurate grading and fine finishing in a minimum of passes — *you save time.* Having the advantage of full tractor power lets you move more dirt on every pass and get the job done faster — *you save money.* Since there is no waste of tractor power, *you save fuel costs.* And lastly, because there's no upset of balance to strain the tractor there's less wear on tractor parts — *you save maintenance costs.*

Investigate these and the many other features offered in Bucyrus-Erie blade attachments. Get the complete story from your International Industrial Tractor Distributor today. 7153

BUCYRUS-ERIE COMPANY, South Milwaukee, Wisconsin



TD-14A and TD-18A Bullgraders and Bulldozers Hydraulic or Cable Controlled

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to NRTS. An engineering design firm is selected by the staff of the AEC Idaho Operations Office, which administers work at NRTS. The design firm develops detailed plans for the unit—except that design and fabrication of the reactor core and much of its control and fuel-handling systems remain with the laboratories. Next a contract is awarded to a construction firm. Also involved are operating contractors who run the plant and who might make final installation of fissionable materials.

Beside the major units, many service-type facilities have been developed similarly. These include power lines, roads, transportation, operation, sewage plants and central shops.

• **Contractor selection**—Construction, design and operating contractors are screened by the contractor selection committee. This group of Idaho Operations Office officials includes two representatives of the engineering and construction division, a supply officer, finance officer, lawyer and administrative official.

An example of their operation is the method by which the contractor was selected for a cost-plus-fixed-fee job.

Some 65 firms were considered originally. The construction contract was to be less than $3 million, so the committee decided to limit the selection to firms with headquarters west of the Mississippi. (For larger work, such geographical restrictions do not hold). Finally, the 65 were boiled down by various means to eight. Headquarters offices of all eight were visited and one—Bechtel Corp. of San Francisco—was selected.

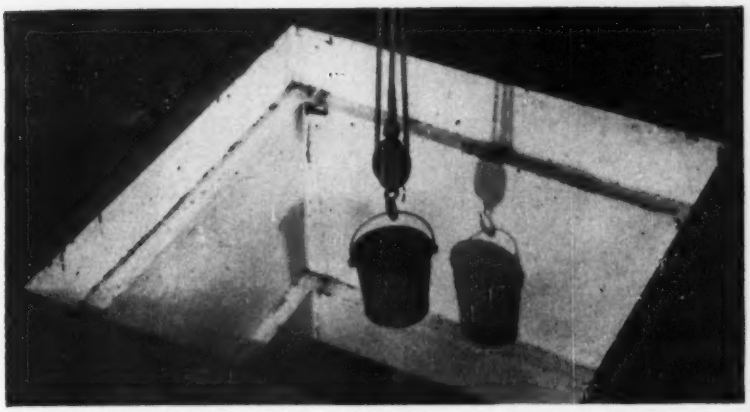
Design and operating contractors are selected on a similar basis.

On lump-sum contracts, bidding is open to all qualified contractors. And an effort is made to eliminate or minimize classified elements in construction programs to simplify security requirements with which contractors must cope.

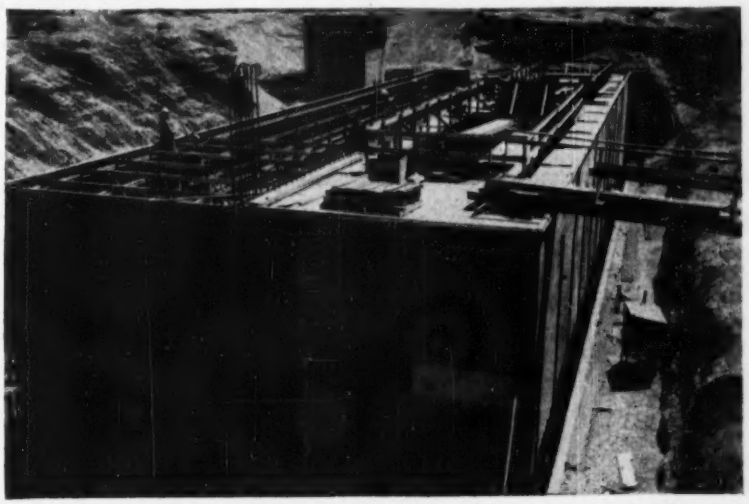
• **Contract separation**—Idaho Operations Office has established a policy of separating design and construction operations.

One reason for splitting the design and construction work is to bring more people into Atomic Energy Commission business. The AEC has a firm policy of trying to develop as much interest as possible in nuclear work on the part of private industry. And this is best accomplished by getting firms to do actual work on some phase of the AEC program.

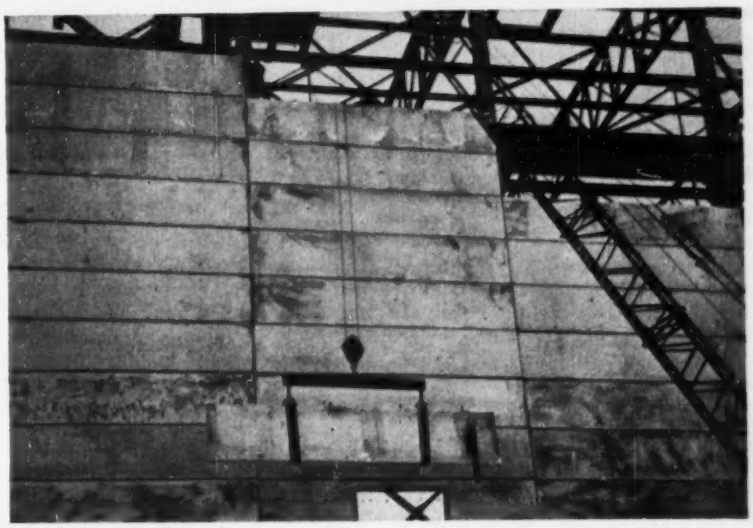
• **How the job goes**—In general, the construction work has been similar



UNDERGROUND RETENTION BASINS, such as this one at the NRTS materials testing reactor, are indicative of the type of construction encountered in building nuclear reactors.



THICK CONCRETE ROOF and walls shield radioactive materials at the NRTS chemical processing plant. Used reactor fuel elements are reclaimed in this unit.



PRECAST CONRETE PANELS encase the steel-frame building that houses the NRTS submarine thermal reactor. Hoisted with the element is rubber joint filler that forms a water-tight seal between panels.

CONTRACT BOARD screens and recommends firms for design and construction of reactor test station units. Included are H. E. Noble, office engineer; W. H. Brummett, Jr., supply officer; Allan C. Johnson, who directs the engineering and construction division; Ray Greenhalgh, finance officer; Bigelow Boysen, counsel; and E. H. Lundahl, board secretary.

CONSULTING BOARD which served as advisors to L. E. Johnston (standing) manager of AEC's Idaho Operations Office, on engineering aspects are H. M. Crothers, dean of engineering, South Dakota State College; W. W. Horner, partner in the St. Louis consulting firm, Horner and Shifrin; and L. J. Sverdrup, president of Sverdrup and Parcel, Inc., also of St. Louis.

to the building of a chemical plant in an isolated location. Large factory-type buildings enclose the major facilities. And each has office and service buildings. Some have elevated water storage.

Each main unit is a separate entity. But a central services area has been established that makes use of buildings that remained from the Naval Ordnance Test Station that the AEC took over. Included are shops, laboratory and library facilities. Some construction facilities such as a concrete batch plant are also provided in the central services area.

Only recently, it was announced that operation of much of the central services facilities would be taken over from other contractors and the AEC by Phillips Petroleum Co. This firm already was operating the materials testing reactor. Phillips has also taken over operation of the chemical processing plant (from American Cyanamid Co.) as well as these functions: Operation of central maintenance, craft and service facilities; operation of the transportation system; operation of the technical library and document control; warehousing, procurement and property disposal; and operation of reproduction facilities. The consolidation is expected to achieve substantial economies of operation, eliminating fee and overhead expenses in excess of $250,000 a year.

Development of the NRTS area has been aided by an engineering advisory committee consisting of L. J. Sverdrup, Sverdrup and Parcel, Inc., St. Louis, as chairman; H. M. Crothers, dean of engineering, South Dakota State College; and W. W. Horner, Horner and Shifrin, consulting engineers, St. Louis. This group considered such matters as unit location, road system, water supply waste disposal, and power supply.

• **No government town** – Although there have been as many as 3,400 people in design, construction and operation of facilities at NRTS (Current total is in the neighborhood of 2,000), no government town has been established. And there are no residences in the test station area proper.

Permanent employees have found living quarters developed by private enterprise at Idaho Falls, Blackfoot and Arco—all located from 20 to 40 miles from the work. Some construction workers have lived at a town now called Atomic City but mostly in their own trailers. Government financing programs such as FHA have helped tract developers keep up with the housing demand. And the nearby cities were declared as critical defense areas so that HHFA guarantees were made applicable.

Separation of the various facilities from living areas has necessitated the establishment of a bus transit system and development of roads. A private operator was awarded a franchise for bus operation, but after several months he "threw in the towel." Fares necessary for the proper operation of such a system proved too high to compete with private automobiles. As a result, the Idaho Operations Office is of necessity subsidizing bus operations, although a private contractor is operating the system.

Since there was no road directly from Idaho Falls to the test area, a round-about route through Blackfoot, Idaho, was at first necessary. The Idaho Department had long-range plans for construction of U. S. 20 directly west of Idaho Falls. With some subsidy from the Atomic Energy Commission administered by the Bureau of Public Roads, construction of the new route was accelerated. It is now complete and in operation. Service roads within the test station area have been built under AEC contracts.

What reactor testing involves

Here is what installations at the National Reactor Test Station are for and what has been accomplished:

• **Experimental breeder reactor**—This first and smallest unit may well be the most significant one at NRTS. Its purpose was to establish the feasibility of electric power generation with heat coming from nuclear fission. First power was generated in December, 1951, the first such power ever developed. Since then, plant lighting and power for pumping have been generated by the plant's 100-kw unit.

The unit also employs liquid metal as the coolant with much basic research being accomplished on this feature. The metal passes through the reactor and into heat exchangers where steam is generated. This powers turbines that, in turn, drive the electric generators.

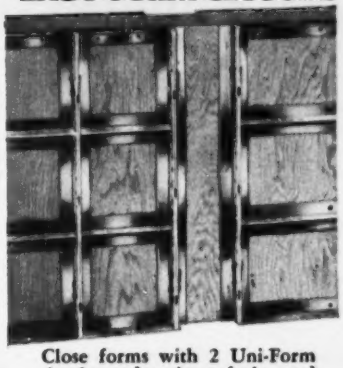
Important work in breeding of fissionable fuels is also a part of the EBR program. In June, the AEC announced that the EBR was producing "at least as much fissionable material" as it was consuming. This is heralded as a very significant step in the development of electric power from atomic fuels. It means that known re-

UNI-FORM Panels SAVE TIME... CUT LABOR AND MATERIAL COST

SIMPLE ASSEMBLY

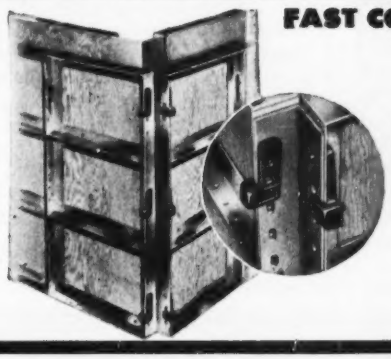
- Set Tie Key . . . lock UNI-FORM Panel and Tie into 1 unit
- Place Uni-Form Tie Loop into Tie Hole
- Place next UNI-FORM Panel . . . insert Tie Key . . . assembly is complete!

EASY FORM CLOSURE

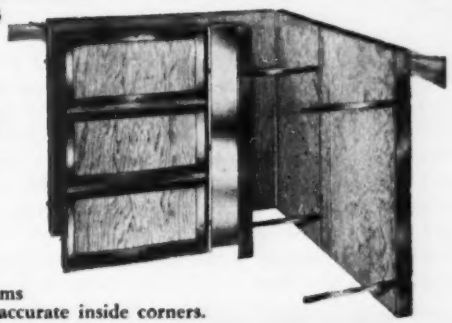


Close forms with 2 Uni-Form Angles and a piece of plywood . . . Start stripping here

FAST CORNER FORMING

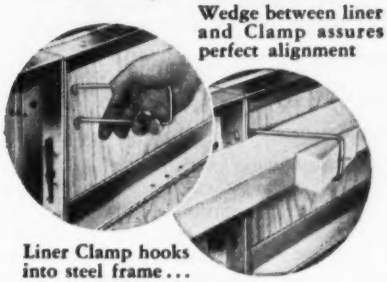


An Outside Corner Angle and Panel Loc Clamps form tight, accurate vertical corner . . . no additional tying.



Rigid Steel Corner forms provide quick...easy...accurate inside corners.

ONE SIDE ALIGNMENT AND BRACING



Wedge between liner and Clamp assures perfect alignment

Liner Clamp hooks into steel frame . . .

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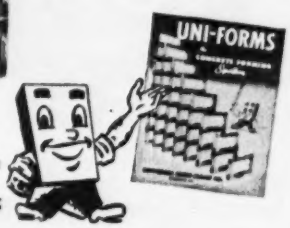

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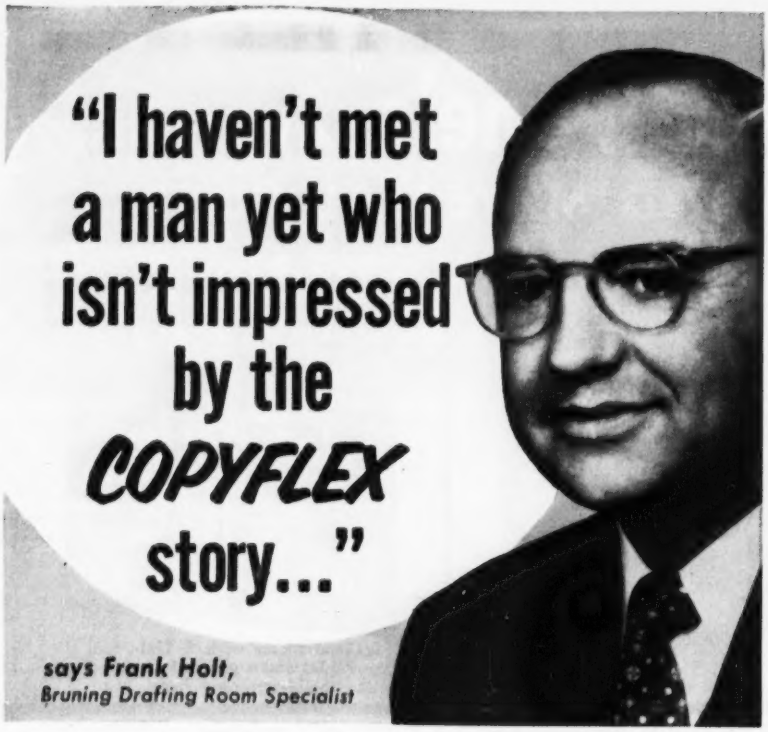

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sources of uranium may be large enough to constitute a major source of energy for many years.

What happens is that in the process of nuclear fission, the pure uranium is converted into heat and also into plutonium. The announcement means that at least one atom of plutonium results from each atom of uranium 235 introduced into the reactor. Plutonium can be used for atomic bombs and other purposes or it can be placed in a reactor as fuel and the process started over again.

• **Materials testing reactor**—This unit—operating now for more than a year—is a high intensity reactor used to test materials that may be incorporated in future reactors. It has a number of openings through which various materials may be introduced and the effect of the nuclear action noted on them. No specific results have been announced by the AEC, but it is certain that future reactor construction will be directly affected.

• **Submarine thermal reactor**—This facility houses a prototype of the reactor that will be used to power the USS Nautilus, a submarine now under construction in Groton, Conn. This reactor achieved "criticality" on March 31, 1953, and it passed its first power test on May 31, 1953. Navy crews are currently at NRTS being trained.

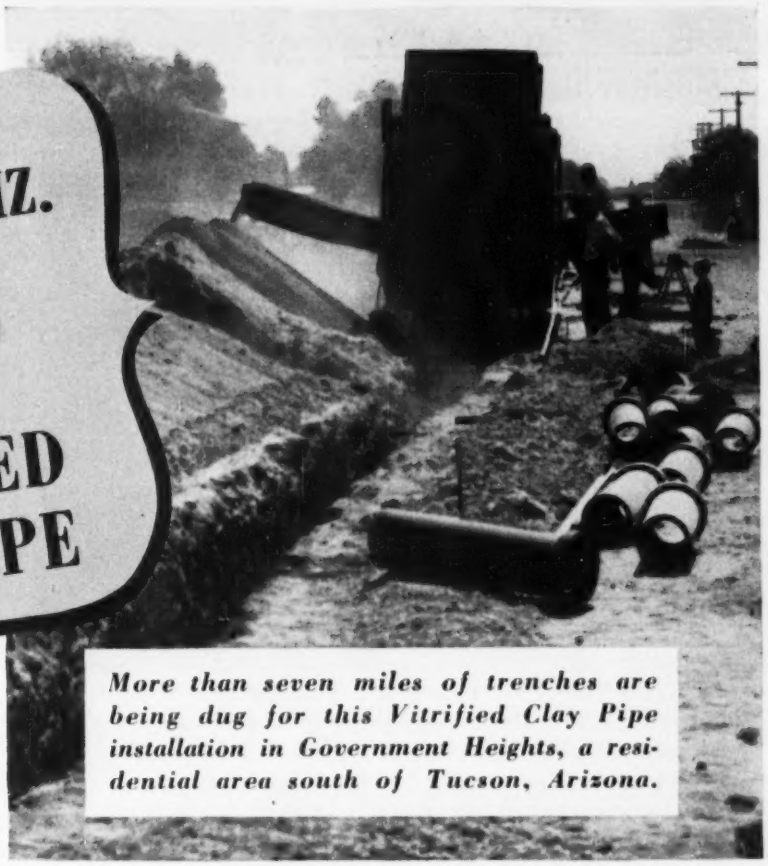
One important thing that the STR demonstrates is that reactors can come in all sizes and shapes depending on the use to which they will be put. Design of a reactor to propel a ship is greatly different from a reactor that will generate commercial electricity. That means that protective materials and other features vary widely.

• **Chemical processing plant** — This major NRTS unit is extremely important to all reactor development, since it is designed to take used atomic fuel from reactors and reclaim it for reuse. It was initially operated in February, 1953, and is the first such plant in this country.

Economics of commercial atomic power generation depends to a large extent on use that can be made of spent fuel. Thus, the work being executed in this chemical processing plant is highly important.

• **Aircraft nuclear reactor** testing facilities—Still in the relatively early construction stages this plant will provide facilities for experiments in the aircraft nuclear propulsion program. Construction is divided into three phases with Phase 1 now under way. This lump-sum contract held by Utah Construction Co. will result in a main building and service buildings.

Suburb of TUCSON, ARIZ. installs 38,000 feet of VITRIFIED CLAY PIPE



More than seven miles of trenches are being dug for this Vitrified Clay Pipe installation in Government Heights, a residential area south of Tucson, Arizona.

In city after city, where residential areas are mushrooming, Vitrified Clay Pipe is the engineers' choice for sewer lines. In critical defense housing areas, where public health is a vital consideration, pipe specified for sanitary sewerage lines is *Vitrified Clay* . . . four to one! There are many reasons for this overwhelming preference:

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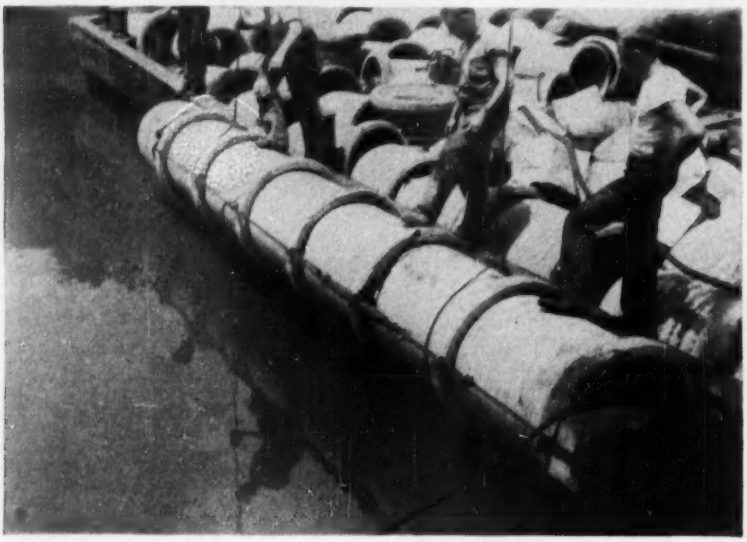
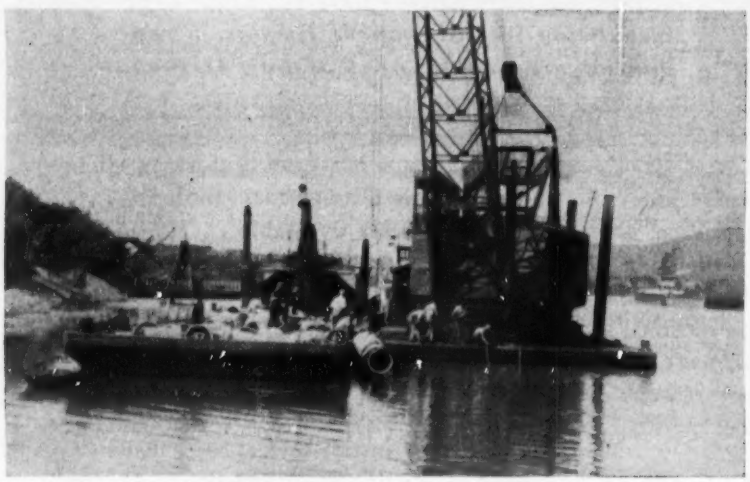


PERFORATED PIPE of a type generally used for drainage was . . .



LAID IN A DREDGED TRENCH 22 ft under the river bed.

Gallery water under bed of river is cheaper than water on surface

Bellaire, Ohio, has put a perforated pipe in the gravelly bed of the Ohio River to collect water. In a recent test run, the installation showed itself capable of collecting 10 to 12 mgd. Its cost per mgd capacity approximated $10,000.

A. R. Todd of Wheeling, W. Va., who designed the filtration gallery, says "it took the place of a river water filter plant that might have cost $500,000."

Mr. Todd's design consists of a 400-ft, 24-in perforated reinforced concrete pipe laid on shale 22 ft below the river bed and 100 ft off shore. River depth at the point is 12 ft.

From this perforated pipe, a 24-in reinforced concrete pipe (solid, to keep out hillside water with a 750-ppm hardness) slopes slightly downward to a caisson on the river bank. The caisson is a cylindrical cell with 9-ft inside diameter and 41-ft depth. Its walls are 2 ft thick; its bottom, 3 ft thick. It is designed to resist uplift in case of high water.

During floods, this watertight cell and its three submersible pumps may be under 35 ft of water. A 2-in. vent pipe extends up a 45-ft telephone pole alongside the structure; pump controls are in a building some 600 ft away.

• **Operating results**—During September tests, the three pumps were let run and water cleared up within four hours. Then with all three pumps running at total capacity (6 mgd), it was impossible to lower water in the cell more than a few inches.

By partly closing the intake valve, water in the cell was lowered 15 ft. But when the valve was opened wide again, the water immediately rose to its previous level. The 10 to 12 mgd capacity mentioned above is an estimate Mr. Todd makes.

Water quality is indicated in the figures below, which compare analyses of the new supply with analyses of the river water at Bellaire.

	River Water 9/21/53	Water from the New Intake 9/21/53
Turbidity ppm	23	0
Temp. F	73	68
pH	6.3	7.2
Total alk. ppm	15	160
Total hardness ppm	160	360
Chlorides ppm	22	35
Fluorides ppm	0.1	0.4
Iron ppm	2.5	0.1
Manganese ppm	0.4	0.2

The people of Bellaire reportedly are pleased with quality of their new water supply, although there have been a few complaints about hardness.

• **How intake was laid**—M & O Dredging Co., of Pittsburgh, Pa., laid the intake pipe. The first 11 ft of river bottom (muck, sand and gravel) was cast on the river side by the floating dredge. The next 11 ft, consisting of nice clean gravel, was cast on the shore side. A trench 9 ft wide at the bottom and 45 ft wide at the top, with a fairly level bottom and very little cave-in, was dug. The 24-in. reinforced concrete pipe was laid with rubber joints under direction of a diver.

Next, 3 ft of 2-in. gravel was placed over the pipe followed by 11 ft of the ¾-in. clean gravel that had been cast shore-side. A 2-ft layer of clay was then placed, and a drag consisting of two 12x24-in. beams bolted together was dragged over its surface several times.

Lastly, the top part of the trench was filled with the river bottom material cast on the river side.

That the river water was sealed off completely was evidenced by the fact that the water cleared up within four hours after the pumps were started, says Mr. Todd.

(Continued on page 55)

Photo courtesy Mercury Manufacturing Company, Chicago, Illinois

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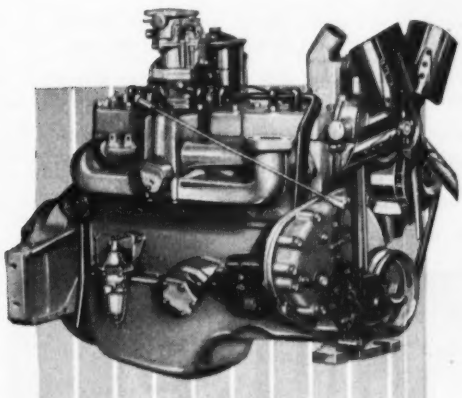

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Rollway Bearing replacements are available through authorized bearing distributors in principal cities. Consult your classified 'phone directory.

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• **Costs**—Cost of laying the 24-in. perforated reinforced concrete pipe 22 ft below the river bed ran about $100 per ft, including cost of the pipe. Total cost of the 100 ft of non-perforated pipe and 400 ft of perforated pipe, in place and including fittings, was $57,000. The cell on the shore cost $35,000, including two 1,000-gpm and one 1,500-gpm submersible pumps.

Mr. Todd points out that this type of intake is practicable only where sufficient gravel is found—12 ft or more of clean gravel. He says test borings to determine quality of the water that could be obtained and type of gravel to be encountered can be made at a cost of around $3,000.

Court rules on service fee; finds charges were illegal

Early this year an Alabama circuit court judge dealt a stunning blow to plans for the improvement of Montgomery's sanitary sewerage. He ruled a sewer service fee "discriminatory" months after the levy had been put into effect.

The city continued to collect the service fee after making arrangements to hold all disputed revenue in trust pending State Supreme Court ruling on the case.

The high tribunal upheld the decision of the circuit judge, and at least a portion of the money collected under the program will be refunded to water users. The decision in both cases was influenced by the contention that owners of the existing properties already had been assessed for their sewerage, but the discrimination did not extend to the owners of new sewer installations.

To date, about $259,000 has been collected, but there is conjecture as to the amount that will be refunded to users. The decisions of the judge and the supreme court were based upon a 1951 law which has since been superseded by a later, more liberal law that went into effect in June of this year. The high court stated, "If a new and different schedule of charges should be set up by the board (Montgomery's Water Works and Sanitary Sewer Board) it cannot become the subject matter of this suit."

The water works manager, Clarence T. Perry, says that in the matter of how much of the collected revenue must be returned, it is believed that only the portion collected before the passage of the July schedule would be affected. He has said, however, that the city will continue to collect the service charge just as though the decision had not been made.

Government builds

Canadian capital buzzes with construction activity

Ottawa, Ont., is two-thirds through a federal building construction program that may hit the $100-million mark over a span of only three years.

At present, the program in the Ottawa metropolitan area is adding more than $67-million worth of new federal structures to the capital area, and to this, if land costs were included, $13-million would be added to bring the expenditure up to over the $80-million mark.

It is thought probable that the various departments will have boosted expenditures over the top, especially if the land and equipment costs are added in the total.

• **Here's where the money goes**—and there are plenty of firmly planned, under construction and completed projects represented.

• Center town buildings:

Veterans' building .... $6.4 million

Trade and Commerce building ..... $6.4 million

(Continued on page 56)

DRINKING FOUNTAIN built by the Department of Parks and Recreation in the Norfolk, Va., City Park, not only proved itself to be maintenance-free and attractive, but—built out of cast-off cobblestones—its cost was $25 as compared with the $135 price of the old cast iron type, according to H. H. George, 3rd, Norfolk's City Manager.

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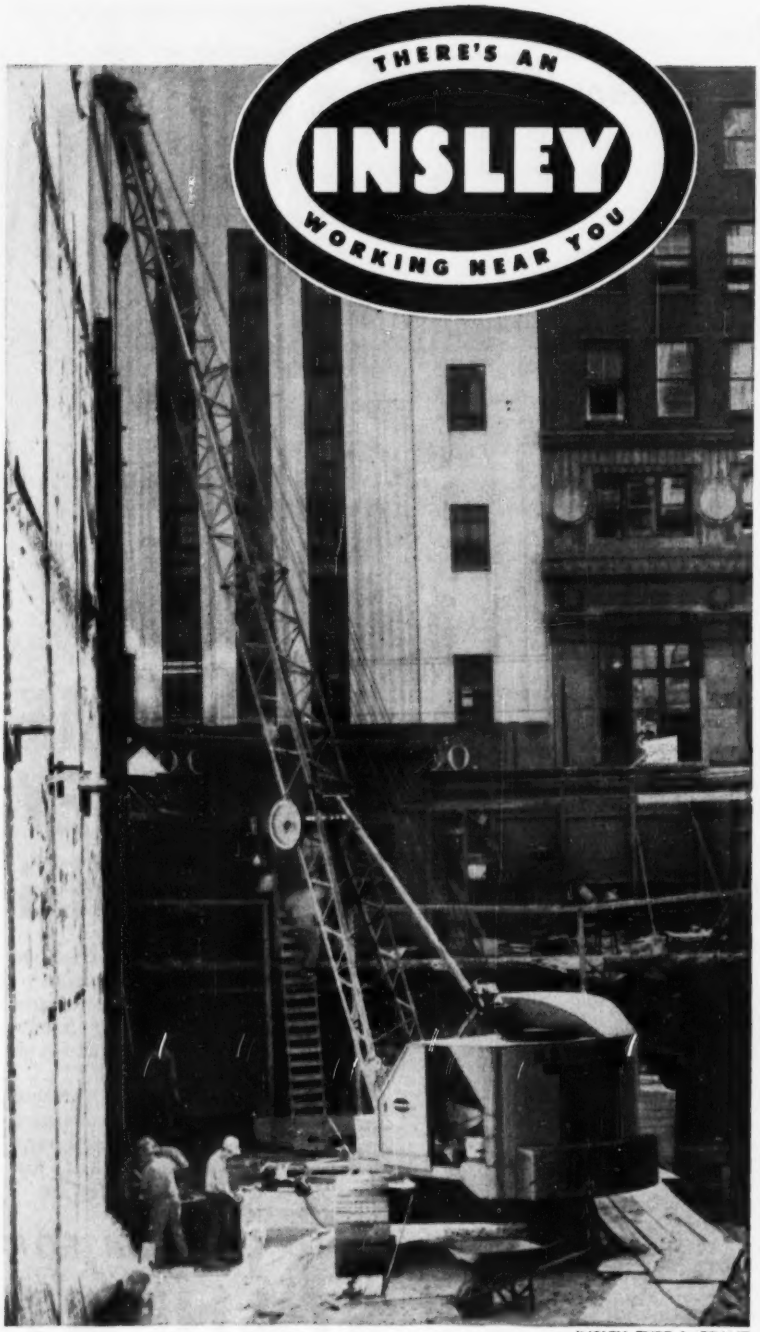

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  - Storage building and offices $605,000
  - Atomic Energy Commercial Products Division building $900,000
  - Food and Drug laboratory ..... $2.6 million
  - Public Works testing lab $681,000
  - Virus laboratory $960,000
  - New storage building and offices ..... $1.5 million
  - Drainage, grading, sodding etc. ..... $1.4 million
- National Research Council buildings:
  - Applied Chemistry building ..... $1.2 million
  - Radio and Electrical Engrs. lab ..... $3.0 million
  - Building Research building ..... $1.2 million
  - Plant Engineering Services and Transport Building $580.000
  - Dairy Research Building $255,000
- Miscellaneous structures $31.7 million

Lay jet fuel line in city—are utilities threatened?

San Diego City officials erupted in a barrage of protests recently when the serving of a U. S. District Court order disclosed to them that the Navy is building a pipeline across the city to carry jet aviation fuel to Miramar Naval Air Station, California.

But the fireworks subsided after Navy officials appeared at the city council hearing and explained:

- City Harbor Department engineers had been notified of the project as early as September, 1952, but apparently had believed that it was classified information and, therefore, had not brought it to the attention of the council.
- The line will carry, in the main, low octane jet fuel which Rear Adm. George C. Dyer, commandant of the 11th Naval District, characterized as no more dangerous in pipes under city streets than are ordinary gas utility lines."
- The contract already has been let and the work is under way.

The federal court order authorized the Navy to install the line and to condemn rights of way later.

The Navy Public Works office at San Diego said that the work is being done by Haddock Engineers, Ltd., of

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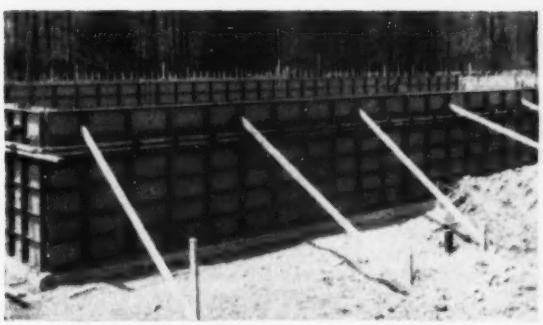

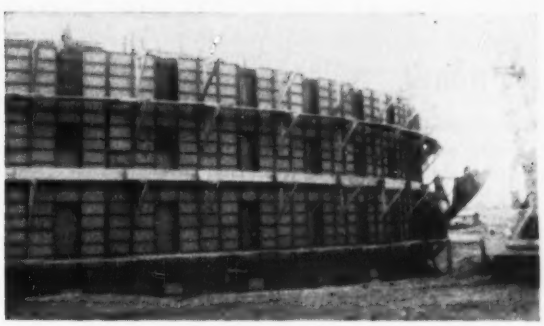

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Montebello, Calif., under a $484,281-contract. It involves laying of approximately 17 mi of 8-in. all-welded steel pipe from the jet air base atop Dearny Mesa (700-ft elev.) to the Naval Fueling Station on the outer San Diego Bay shore of Point Loma. Barney Dickson, general project superintendent for Haddock, said that about 250 days remain on the 300-day work schedule for the project. About 2 mi of the line will be laid under city streets. Depth of the trench will be four ft with some cuts running to a depth of 17 ft.

Adm. Dyer explained that the line is necessary to supply the inland air station with increasingly large amounts of jet fuel. He said the present system of supplying the base by tank trucks is more dangerous than the use of a pipeline, and noted that the heavy trucks damage city streets and state highways.

After their conference with Dyer, city officials decided to drop their protests.

Study new power dam site is Northwest city's plea

As a result of approval by the city's board of public works, City Light of Seattle, Wash., may apply to the Federal Power Commission for permission to investigate a site for a proposed hydroelectric dam on the Pend Oreille River 230 mi from the municipality.

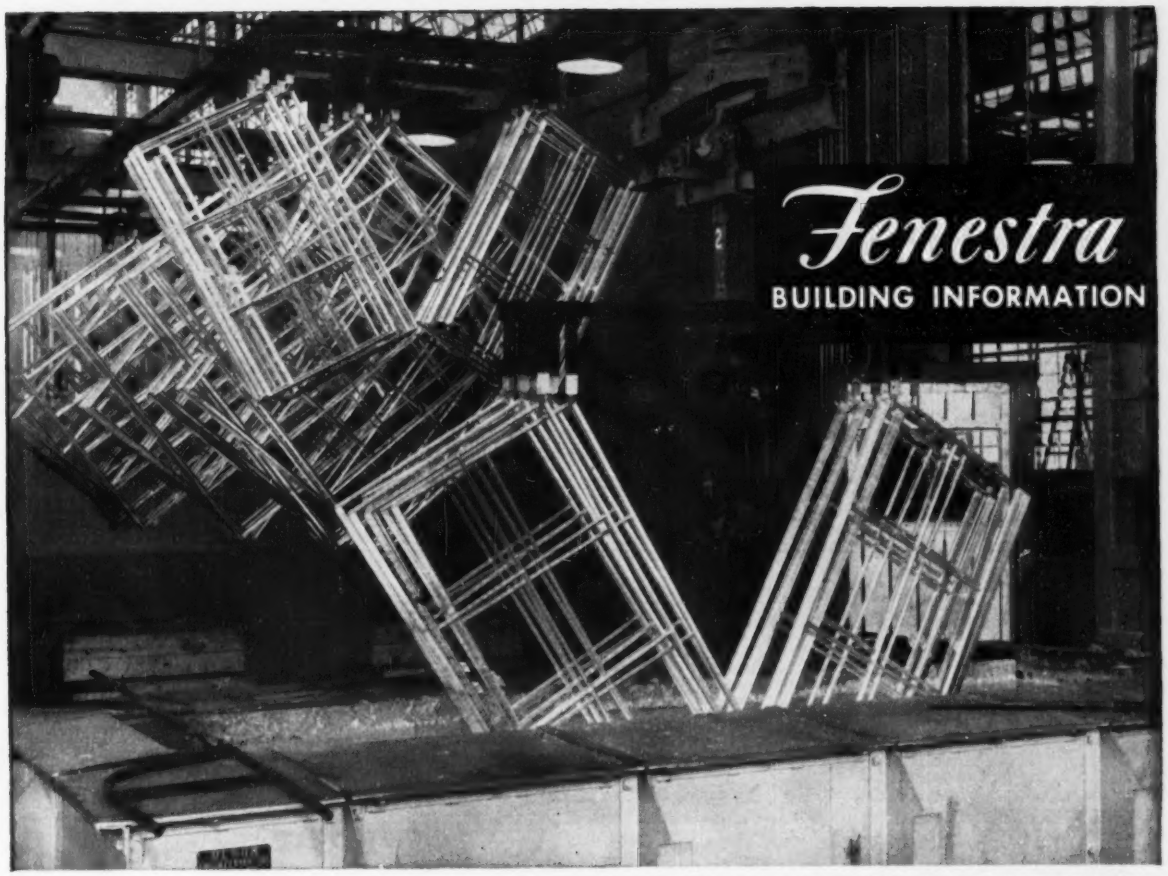
E. R. Hoffman, City Light superintendent, declared that the utility would like to study the Boundary site in a V-shaped canyon a mile below the Canadian border. It is believed the site could produce somewhere between 100,000 and 500,000 kw of power, depending upon the amount of mining land that could be flooded.

The Pend Oreille Public Utilities District is building a dam upstream from the proposed site, and the same river which flows northward at that point, is dammed downstream at Waneta, in Canadian territory.

Preliminary studies indicate that the proposed development is the most feasible of any available for assuring Seattle of adequate power supply in the future, Hoffman said.

Projection of Seattle's growing power needs against the scheduled output from the City Light's Skagit power project when the major units on the Skagit River have been completed, indicates that City Light will find it necessary to purchase 450,000 kw of outside powers in 1960-61, Hoffman added.

(Continued on page 61)



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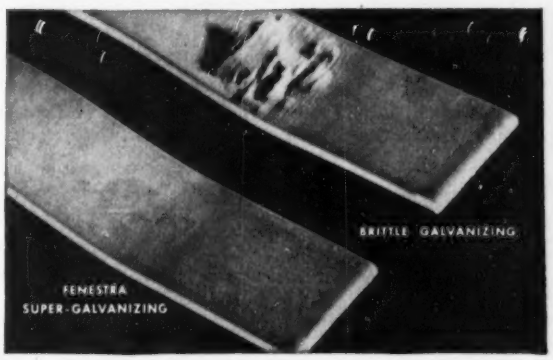
Contact your Fenestra Representative today—he's listed in the yellow pages of phone books in principal cities. And send for your free booklet on Fenestra Super Hot-Dip Galvanized Steel Windows. Write Detroit Steel Products Company, Dept. ER-12, 2286 East Grand Blvd., Detroit 11, Michigan. ★®



BEND TEST shows why Fenestra Steel Windows are called Super Hot-Dip Galvanized. When two pieces of galvanized steel are bent, then straightened, some types of galvanizing crack open, leaving the steel vulnerable. The Fenestra piece *stays* protected.

Fenestra

SUPER HOT-DIP GALVANIZED STEEL WINDOWS

from the only plant in America especially designed to Hot-Dip Galvanize steel windows

NOW! NEW 1954 CHEVROLET TRUCKS

Completely new—the most powerful, finest performing, best-looking Advance-Design trucks ever built!

Here's America's greatest truck builder's latest and greatest truck! Here's the brand-new line of Chevrolet Advance-Design trucks for 1954!

You'll find they're packed with great new features . . . loaded with big new advantages that mean faster, more efficient service and lower operating costs on *your* job.

NEW POWER AND ECONOMY

You get new high-compression power and greater operating economy with *three* advanced valve-in-head engines. Bigger, brawnier "Thriftmaster 235" engine. Rugged, durable "Loadmaster 235" engine. Mighty, all-new "Jobmaster 261" engine*—most powerful in Chevrolet truck history.

Most trustworthy trucks on any job!

CHEVROLET

ADVANCE-DESIGN TRUCKS

NEW RUGGEDNESS AND RELIABILITY

Heavier axle shafts on 2-ton models. Bigger, more durable clutches on light- and heavy-duty models. Stronger, more rigid frames on *all* models. New pickup and stake bodies are built to stand the roughest going and to keep coming back for more—and they give you greater load space for '54!

NEW COMFORT AND CONVENIENCE

New Comfortmaster cab provides increased visibility with new one-piece curved windshield. New Ride Control Seat* brings you extra driver comfort. New truck Hydra-Matic transmission* offers the last word in no-shift driving ease. Available not only on ½- and ¾-ton Chevrolet trucks, but on 1-ton models, too!

Plan to see the completely new '54 Chevrolet trucks, and get the whole money-saving story at your Chevrolet dealer's now. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

**Optional at extra cost. Ride Control Seat is standard on C.O.E. models, available on all other cab models as extra equipment. Rear corner windows in standard cab, optional at extra cost.*

MORE CHEVROLET TRUCKS IN USE THAN ANY OTHER MAKE

If the utility company builds the dam, transmission lines could be connected with Bonneville Power Administration lines in the Spokane area, not far from the dam site, for "wheeling" the power to Seattle. The Pend Oreille PUD already has made arrangements to sell some of the power from its dam to the cross-state Whatcom County PUD, in what would be a similar arrangement.

The Skagit River, fairly close to Seattle, long has been City Light's main source of power. It now supports three dams, one of which may be heightened under plans now being studied, while still another dam to be built in that area also is under consideration.

Hawaii solicits pipe bids

Honolulu's city-county government sent two sewer officials to Los Angeles recently to encourage stateside firms to bid on Hawaii sewer pipe projects under consideration.

George D. Wallace, head of the sewers division, and Wallace Kiyabu, superintendent of sewer maintenance, were dispatched only after a heated political controversy within the Board of Supervisors. Mayor John H. Wilson recommended the trip and it finally was approved by a 5-2 majority vote.

Sewer officials explained that only two local firms has previously been in a position to bid on sewer pipe contracts and that this had been trimmed to one with the recent purchase of the Collins Concrete & Steel Pipe Co. by the Honolulu Construction & Draving Co.

They believed that stateside competition was needed to assure tight bidding on future contracts. Next year the city-county plans to buy around $180,000-worth of 78-in. concrete sewer pipe.

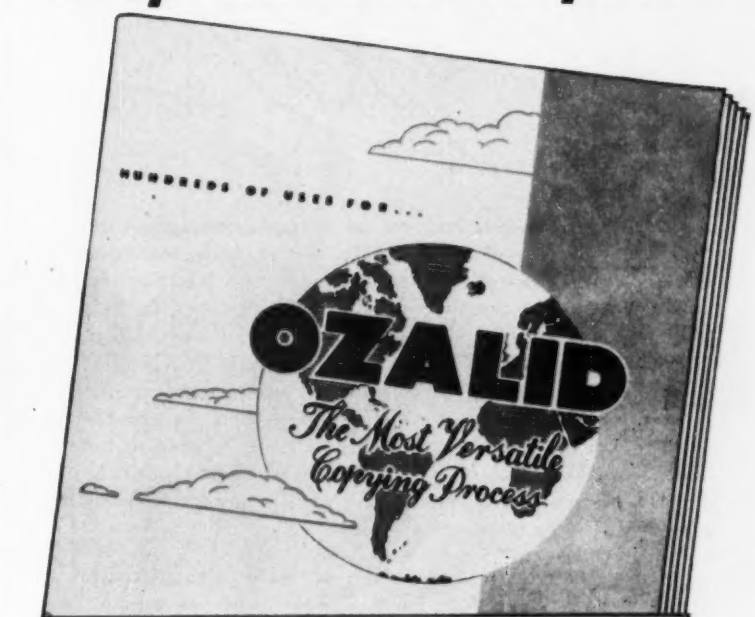
The cost of the two trips to Los Angeles: $1,000.

Loading berth ordinance—new buildings are affected

The Milwaukee, Wis., common council has passed a new ordinance requiring business firms, office buildings, hotels and institutions to provide truck loading and unloading berths. The measure will apply to new structures and additions to present buildings, but not to existing buildings.

Under the terms of the ordinance, manufacturing establishments, warehouses, wholesalers, retail stores and freight terminals will have to provide one truck berth for up to 20,000 sq ft

Read how OZALID copies are saving for others...how they can save for you!



THIS 48-page "Hundreds of Uses" booklet tells how others are speeding up work and making important savings by using Ozalid copies.

For example, a production home builder tells how he cut plan costs 56% and saves $16,800 per year.

A small manufacturer, who needs shop prints showing a different machine set-up for every production order says, "We thought we couldn't afford Ozalid—now we know we couldn't afford to be *without* it. Our machine paid for itself in six months!"

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KEEPING PACE

The steady growth of inland marine insurance throughout the country is evidence of its versatility. For example, insurance can be secured for retailers' goods shipped on land, by sea, and in the air; for manufacturers' merchandise consigned to various sections of the country; for contractors' equipment and mobile agricultural machinery wherever it may be. But these are only a few of the things that need inland marine protection, because anything that is moved from one place to another – on land, by sea, and in the air – is exposed to the same hazards to which stationary objects are exposed *plus* the dangers inherent in transportation. Only inland marine insurance provides the necessary safeguards.

In 1940, the NATIONAL SURETY MARINE INSURANCE CORPORATION was founded to fill the need for a larger market in the rapidly expanding inland marine insurance field. Since that time, National Surety Marine has kept pace with the nation-wide development, because it seeks always to tailor this functional coverage to the specific needs of each insured.

Has YOUR insurance program kept pace with the requirements of YOUR business? We invite your inquiries.

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INSURANCE CORPORATION, 4 Albany St., New York

National Surety Marine Insurance Corporation
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Name ____

Address ____

City ____ Zone ____ State ____

My agent or broker is ____ Address ____

(This information will be forwarded to you through your agent or broker.)

of floor space and eight for up to 490,000 sq ft. Everything over 490,000 sq ft will require one additional space for each 90,000 sq ft.

Office buildings, transient hotels, hospitals and sanitariums will have to furnish one berth for up to 149,000 sq ft and seven berths for up to 1,959,999 sq ft. Everything over that will require an additional space for each 90,000 sq ft.

Single berths will have to be 40 ft long by 12 ft wide, though with two or more berths side by side, each may be 10 ft wide. Inclosed berths must have 12 ft of clear horizontal width.

Slum program cited by NAHB

Praising the New Orleans, La., slum rehabilitation program as the "best organized and most promising campaign of its kind in the United States," Salt Lake City, Utah, builder Alan E. Brockbank, immediate past president of the NAHB and chairman of the NAHB's Housing Rehabilitation Committee, presented a bronze plaque to Mayor deLesseps S. Morrison in New Orleans recently.

The program calls for a city department with centralized authority and responsibility for strict enforcement of standards.

In the presentation rite, during the opening session of the NAHB annual congress in the Louisiana city, Brockbank pointed out that, although New Orleans began looking into the NAHB sponsored plan only last spring, it already has rehabilitated one block of homes in one of the city's worst slum districts and is preparing to do the same for 300 more housing units.

Heavy federal taxes seen municipal drain

The heavy burden of federal taxes is the biggest stumbling block to billions of dollars worth of needed municipal improvements, according to Charles S. Rhyne of Washington, general counsel for the National Institute of Municipal Law Officers.

"Because of the great burden of federal taxes," Rhyne told delegates to the Florida League of Municipalities convention in Miami last week, "people generally are unwilling to vote enough local taxes to finance urgently needed local projects."

He attributed the "near disastrous" financial condition of many cities to federal taxes that "siphon off about one in every four dollars earned."

Rhyne saw little hope for a lessening of the federal tax burden, in view of world conditions.

Wellpoints "Blow-Proof" A Sewer Trench

This twin 90" storm sewer is shown under construction in Paducah, Kentucky, by the D. W. Falls Construction Co.

Material to subgrade was stiff red clay – 13' of it – while at subgrade was a layer of sand *under artesian pressure.*

A Moretrench Wellpoint System, installed through the clay into the sand, (1) lowered the water level, (2) relieved the hydraulic uplift pressure, (3) prevented hazardous "blows". Pipe laying proceeded in absolute safety in a stable, dry trench.

Find out from our nearest office how little it costs, how much you gain, when you work with Moretrench "in the dry".

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YOU NEED the most efficient, most dependable kind of trucks for today's schedules . . . today's costs of doing business . . . today's work conditions.

That's why you see so many Whites in excavating, road-repair and maintenance service and dump operations.

Tailored to the exact needs of your work, Whites have the power and the rugged reliability to get *more* work done . . . in *less* time . . . at *lower* cost than any other truck you can buy.

Find out how Whites save money in *your* service. See your White Representative.

This WHITE Model 302264 is in road repair and maintenance service for Maricopa County, Arizona.

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- √ SINGLE drive axle units with single or double reduction or two-speed axles.
- √ TANDEM drive units with double reduction axles.
- √ SINGLE or double channel frame.
- √ TRANSMISSIONS—various transmissions and auxiliary transmissions to meet local operating conditions.

INTERNATIONAL

CONCRETE BRIDGE, south of Curityba, Brazil, spans 473 ft on six single piers of which the tops spread out in fan shape. The fan is of a constant thickness above the column and it springs from the column at a point just above maximum flood level.

Single piers with fan-shaped tops support discontinuous concrete span

Linking the states of Parana and Santa Catarina in Brazil, a reinforced concrete bridge, on single piers, spans 473 ft over the Rio Negro. Providing two highway lanes, the structure cost only $150,000. The bridge piers support five 83-ft spans and two end spans of 29 ft each. The 1st, 3rd, and 5th spans are monolithic with the fan-topped piers at their ends. But the 2nd and 4th spans of the bridge consist of 42-ft middle sections—with expansion joints at their ends—simply supported on short cantilevered overhangs from the 1st, 3rd, and 5th spans. The discontinuous span design and the single piers supporting it were used to overcome the problem of slope and possible future settlement of the clay substratum on which the piers are founded.

• **Resting on spread** footings, the columns are circular in section up to the maximum flood level (20 ft above normal water level) at which point their tops fan out. At the underside of the superstructure the fan shaped column tops are as wide as the road deck and are of constant thickness down to the point of the fan. For architectural effect the rotundity of the columns, extending past the fan thickness, is continued up to the road deck. However, this continuation of the column is hollow on either side of the fan and is free of the fan so as not to hinder its longitudinal flexibility under expansion and construction of the 1st, 3rd, and 5th spans.

The bridge was built by Sotege, Ltd., Rio de Janeiro, for the Brazilian National Highway Dept.

Kashmir and India to be linked by all-weather tunnel

Work is expected to start next April on a two-mile vehicular tunnel to link Kashmir and India in all weathers. The present road from Jammu, near the Pakistan-Kashmir border, winds 130-miles around the Pir Panjal mountain range to reach Srinagar the capital of Kashmir. Srinagar, lying in one of the many north Indian river valleys which form the headwaters of the Indus River, is cut off from Pakistan in the winter except for intermittent air service. The tunnel, to cost $7.5-million, will be bored through the Pir Pinjal mountain range below Banihal at an elevation of 7,200 ft. The new bore will reduce the highway distance from Jammu to Srinagar by nearly 25 miles and will be usable year 'round.

(*International continued on page 66*)

HOW TO HANDLE
WET JOBS

#23 of a Series

NEW SEA LIFE HOME FOR MARINE STUDIOS

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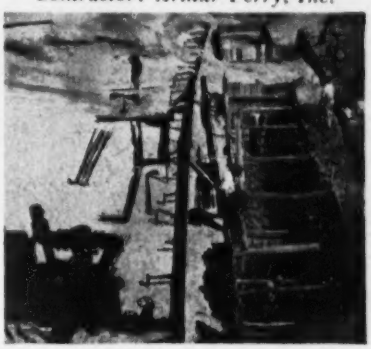
Contractor: Arthur Perry, Inc.



50 POINTS, 240-ft header: What volume could be handled by a well-point system of such size, working in very coarse water-bearing sand just a few ft from the ocean? Answer below.

3,960,000 GALS per day were pumped round-the-clock for the life of the job—this entire flow handled by one Griffin Vac-u-matic wellpoint pump.

SUCH exceptional drainage volume—it's 55 gals per minute for each point—will surprise many contractors. Others know from repeated experience the superiority and efficiency of the Griffin system.

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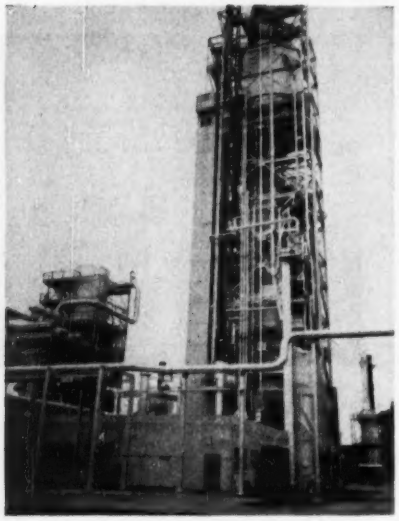
HOW FRANKI FOUNDATION COMPANY Saved $30,000 For Socony-Vacuum Oil Co. Inc.



A modern catalytic cracking unit at Socony-Vacuum's East St. Louis Refinery will be supported by 119 Franki Pressure Injected Spread Footings. Consulting Engineer—The Lummus Co., New York City.

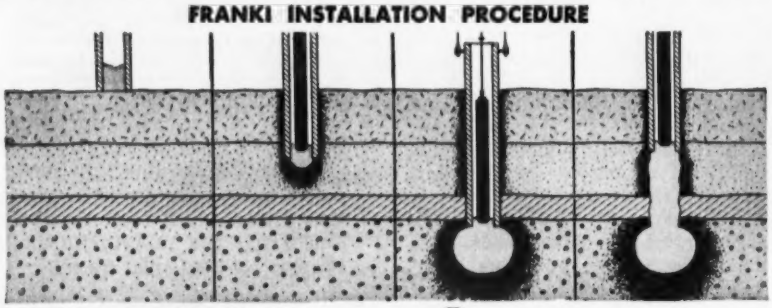
• Original specifications called for 30-ton pre-cast concrete piling. Because of the heavy vertical loads and high winds (up to 100 m.p.h.), this method required extremely large concrete caps.

Franki Pressure Injected Spread Footings were substituted, providing vertical load capacities up to 120 tons per unit, and uplift resistances to 50 tons per unit. It was possible to greatly reduce the cap concrete as well as install the foundation to shallower depths, because of the great force utilized in forming Franki Displacement Caissons and resultant sub-surface soil compaction. Result: A saving of more than $30,000. Proof again that Franki Pressure Injected Spread Footings are first for speed, safety and economy.

. . . LIGHTEN YOUR COSTS . . . INCREASE YOUR LOAD! . . .

Send for "Franki Facts" for complete information about this Socony-Vacuum Oil Company project—and an illustrated booklet describing the Franki Foundation Method in complete detail. Write Franki Foundation Company, 114 East 40th St., New York.

FRANKI INSTALLATION PROCEDURE



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FIRM FOUNDATIONS FOR OVER FORTY YEARS

INTERNATIONAL

Flat jacks stress 500 ft of tunnel

Hydro jacks in series prestress great lengths of tunnel in one step

Curzon Dobell
President, Preload Co., Inc.
New York, N. Y.

In Germany a new method of prestressing lengths of rock tunnel linings up to 500 ft long—even while they are under operating water pressure before grouting—has been developed with the use of hydraulic flat jacks.

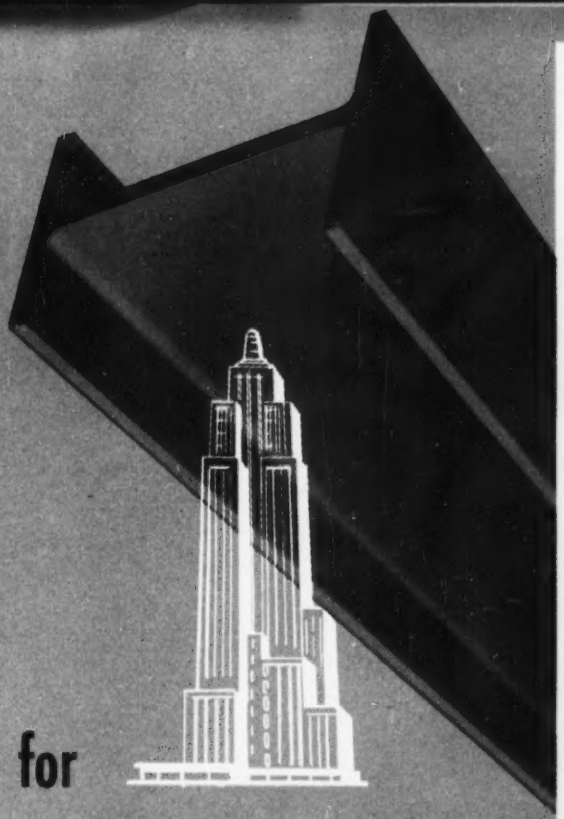
[Flat jacks are thin, elongated sheet metal flasks which, when filled with a fluid under pressure, expand or fatten and thereby push away, or induce compression in, the material in contact with the sides of the flat jack.]

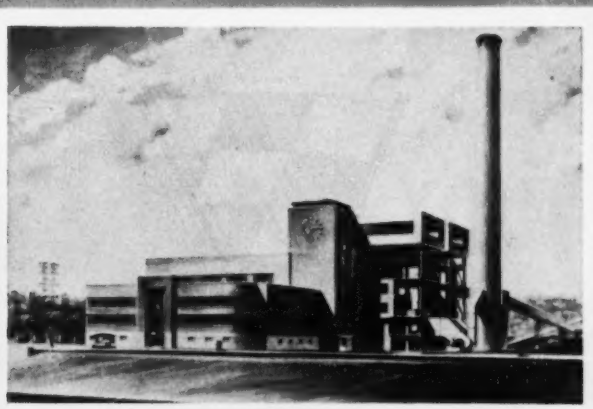
A circumferential prestressing force is applied to the circular concrete tunnel lining through a series of flat jacks (connected to each other by short lengths of pipe) in slots at two or three points in the tunnel circumference. A permanently effective prestress is thereby created without the use of steel prestressing wires.

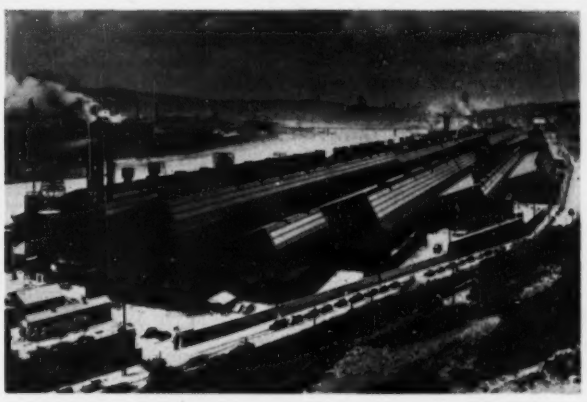
• **Holding the prestress**—Hydraulic pressure in the flat jacks can be maintained—at the power house at one end of the tunnel—until plastic deformations of surrounding rock material have taken place. The tunnel may be charged with water under full operating pressure, and the prestress increased if there is any further plastic movement. The method permits an effective pre-consolidation and simultaneous substantial increase of the elastic modulus of the rock material surrounding the lining. The prestress induced in the concrete lining is thereby made permanently effective.

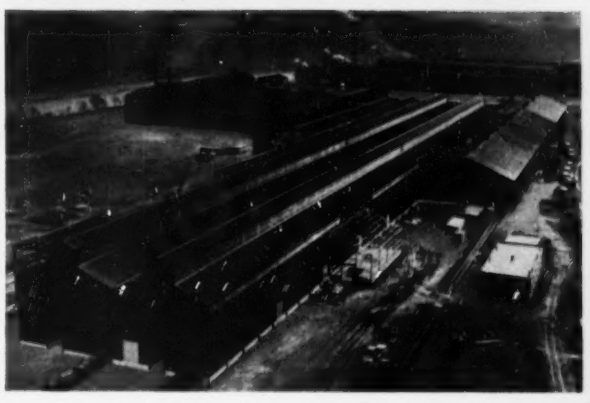
At some later date the longitudinal slots in the tunnel lining circumference (in which the jacks are placed) will be concreted in flush with the inside tunnel wall. Hydraulic pressure in the jacks is then taken off and the jacks drained. They can be pressed up again at any later date if further deformations of the surrounding rock make this necessary. Ultimately the flat jacks themselves are pressure grouted.

• **Plastic tube jacks**—Transverse joints in the tunnel lining are provided with a ring shaped plastic pressure tube.









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IN FEATURES

This 111-M Diesel shovel owned by Palisades Contractors of Irwin, Idaho is working on the Palisades Dam on Snake River in Eastern Idaho. Palisades Contractors is a joint venture of the J. A. Jones Co. and Chas. H. Tompkins Co. Palisades is the biggest earthfill dam undertaken by the Bureau of Reclamation.

MARION 111-M

If you want REAL economy in your excavating costs, year after year — if you want machinery investment dollars to pile up profits long after the cost has been amortized — if you want, at no extra cost, the power and stamina that gets big jobs done ahead of schedule, you want a MARION 111-M. Here are features that literally PAY FOR THEMSELVES and earn EXTRA PROFITS for you. Don't buy a 4-yard machine without getting ALL the facts on the MARION 111-M.

STRENGTH— How strong? Strong enough to exceed the maximum strains and shocks in the hardest digging — reserve strength for troublefree operation over the years. Fewer work stoppages mean more profit for you.

POWER— How much power? Enough to make a 4-yard dipper perform the way you have a right to expect, whether the bank is shot rock or hard clay. Compare bail pull and hoist and drag speeds before you make final decisions. Power, properly applied, means more profits.

ELECTRIC SWING — Electric swing on a diesel machine gives you a new concept of speed, smoothness and accuracy in spotting the load. No swing clutch adjustments — no overheating — no jerking strains and shocks. Fast, smooth swing is the key to faster cycle time — and the key to extra profits.

QUALITY MATERIALS— Look into hidden features. Forged shafts, alloy steel and heat-treating make tremendous differences in field performance. There is more than meets the eye in MARION quality — quality that is present only because it will help you to greater profits.

FIELD-PROVED — Nearly a decade of experience in all types of work, under every operating condition, is behind today's 111-M. There are no "bugs" or "soft spots" here — just field-proved design and construction that mean profits for you.

ES THAT MEAN *Extra Profits* FOR YOU!

This MARION 111-M shovel, owned by Savin Construction Corporation, is working on two sections of the Thruway near the Hudson River that involve moving more than 5,500,000 cubic yards, half of which is rock. Unusually rugged terrain is involved in the 22-mile project.

AIR CONTROL— There's a big difference in controls — be sure to see how MARION has developed and refined air control before you buy your next machine. It is smooth, easy to handle, but more important, it is more dependable and free from maintenance care. It can help you to extra profits.

GOOD CRAWLERS— The lowly crawlers can help make or break your excavating profits on big jobs. Here are crawlers you can truly "forget" — they clean themselves, never clog and crawler belt tension adjustments are made easily and quickly. Here is crawler performance that helps boost profits.

DURABILITY— Extra years of hardest, heavy-duty service built into every part of the 111-M give extra profits long after you have written off its cost. Count on durability, dependability—you'll get them.

EASE OF MAINTENANCE— Every part of the 111-M requiring maintenance care is accessible for service. Even partial dismantling for shipment is simplified. Lubrication points are grouped for easy servicing. It takes fewer hours to keep a 111-M in top condition — fewer hours mean greater profits.

ANTI-FRICTION BEARINGS— The only reason for generous use of anti-friction bearings throughout the 111-M is to make it a more profitable machine for you to own and operate. Get the full story on these bearings and how they pay big dividends.

A BIG 4-YARD MACHINE— Calling a machine a 4-yard shovel doesn't necessarily make it so. Analyze the strength, power and performance characteristics behind MARION'S machine ratings. See for yourself how the difference can mean profits for you. Depending on the class of work, some owners use 5 cubic yard dippers on the MARION 111-M.

MARION SERVICE — The service, the help and the make-good that go with every MARION machine are intangible extras — but they are important to you, profitwise, now and in the years ahead. Fast parts service helps meet your needs in the field.

For complete information ask for Bulletin 402-A (diesel power) or 408 (Ward-Leonard electric).

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MARION, OHIO, U. S. A.

OFFICES AND WAREHOUSES IN ALL PRINCIPAL CITIES

from ¾ cu. yd. to 45 cu. yds.

CUT CONCRETE COSTS 2 WAYS! with MASONITE Concrete Form Presdwood

for unpainted surfaces

Hand-rubbing Costs Cut 50% or More using screen side

You can figure on saving at least 50% of the cost of getting a smooth, white, blemish-free surface . . . simply by specifying Masonite Concrete Form Presdwood® with screen side facing the concrete. The reason is simple: All the tiny projections left by the screen pattern help to form a better "soap" in rubbing . . . secure a perfectly smooth and attractively light, even-colored surface in a fraction of the time.

for surfaces to be painted

Hand-rubbing almost Entirely Eliminated using smooth side

No knots, no lumber grain marks, no surface blemishes on the smooth side of Masonite Concrete Form Presdwood. Leaves a smooth, even concrete surface. Needs only the rubbing down of the small fins at the joints before painting. Jobs get done sooner; costs take a tumble. Large 4′ x 8′ and 4′ x 12′ panels in 3/16″ and 1/4″ thicknesses . . . create fewer joints . . . fewer fins. Prove it to yourself on your next job!

Either way, you can count on these *Extra* advantages:

- More re-uses. Panels can be used again and again.
- Cuts down on the cost of form lumber.
- Will not split, splinter or crack.
- Insures complete, uniform hydration.
- Can be bent to form arches, columns and other curves.

Send for the complete facts about Masonite Concrete Form Presdwood!

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"Masonite" signifies that Masonite Corporation is the source of the product

The tube can be pressed up to 440 psi and the transverse joint drypacked. Release of this pressure in the concreted joint not only guarantees watertightness but also causes a desirable longitudinal prestress in the lining. A special steel ring and rubber gasket across the transverse joint give added protection and facilitate repair should one of the plastic tubes fail.

Like the lines of flat jacks, the transverse pressure tubes are connected to a mainline leading to the pumps in the powerhouse where their watertightness can be controlled.

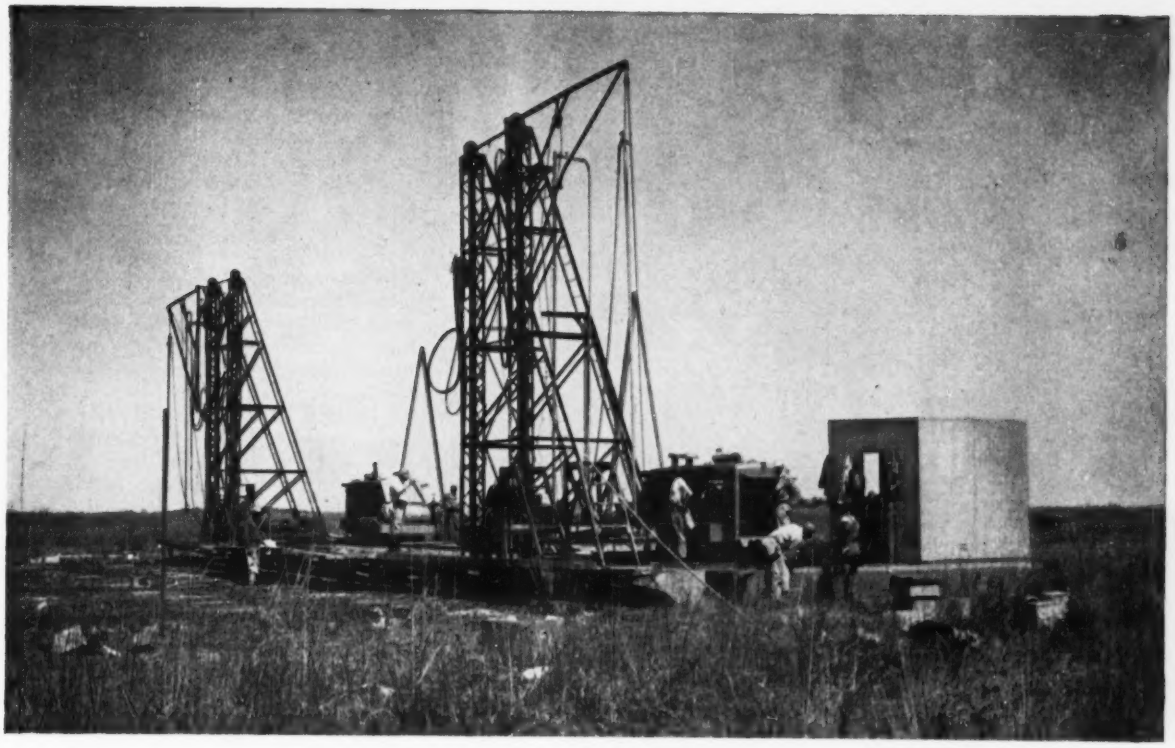
• **Construction procedure**—In using the method, a circular concrete lining of predetermined thickness is poured directly against the excavated rock profile and an inside steel form on a form carriage. (In soft or poor rock the material surrounding the lining is first stabilized by grouting.)

At top and bottom of the vertical diameter of the tunnel, the hydraulic flat jacks are installed lengthwise in the lining. The installation of the longitudinal flat jacks at top and bottom of a circular concrete lining permanently eliminates the dangerous tensile zones which normally exist at these points in nonprestressed linings. This arrangement of the jacks is for sloping or horizontal tunnels. For vertical tunnels, lines of flat jacks could be placed at 90 or 120 deg intervals.

The jacks may be placed before pouring the concrete, or they are inserted between special slot stones after the lining concrete has hardened. The flat jacks, made of thin sheet metal, are connected to each other with 3/8-in. dia. pipe. Individual flat jacks around 30 ft long may be inter-connected for simultaneous prestressing of tunnel lengths up to 500 ft. This is particularly important in poor rock material where anticipated large deformations can be neutralized.

• **Prestress in stages**—To prestress the tunnel length, jacking pressure is increased in stages up to approximately twice the operating water pressure. At each stage the pressure is held constant until the plastic deformations of the surrounding rock materials have essentially stopped increasing. Under certain geological conditions this increase or creep may last several days.

When the rock material has settled to a stable condition and the required pressure is reached, the longitudinal slots below the flat jacks are filled with concrete and jacking pressure is reduced. Reducing the jacking pressure at this point effectively increases



LAND-GOING DRILL BOAT

Helps Blast 16-Mile Canal through Florida's Everglades

Amphibious barge readily towed through water or overland, carries four I-R famous X71WD Drills powered by two I-R Gyro-Flo Compressors

Deep in the heart of Florida's Everglades, the Gahagan Construction Corporation of New York is engaged in drilling and blasting 2½ million cubic yards of coral rock. The rock lies in 16 miles of proposed drainage canals across the peat and semi-fluid waste land of the Everglades.

The contract covers part of a huge flood control and water conservation project that will consist of a series of levees and borrow pit drainage canals dividing the district into vast protected areas. An artificial lake 1500 square miles in area will be created which will be used to store excess flood waters until needed for irrigation and restoration of water levels during dry periods.

To drill 11 of the 16 miles of 90 foot canal under existing conditions required radical innovations in rock drilling equipment. A special all aluminum amphibious drill barge that can be towed through water and pulled overland was designed by Gahagan Construction Corporation to carry the compressors and drilling towers. The work is under the control of Jacksonville, Fla. District of the Corps of Engineers, U. S. Army.

Four Ingersoll-Rand X71-WD Drills were selected to do the drilling because of their high drilling speed and hole cleaning ability especially on deep holes. Two Ingersoll-Rand Gyro-Flo 600 cfm rotary compressors were chosen because of their light weight and ability to deliver high pressure air at full load.

Ingersoll-Rand makes a full line of contracting equipment. Ask about the I-R Contractors Combination.

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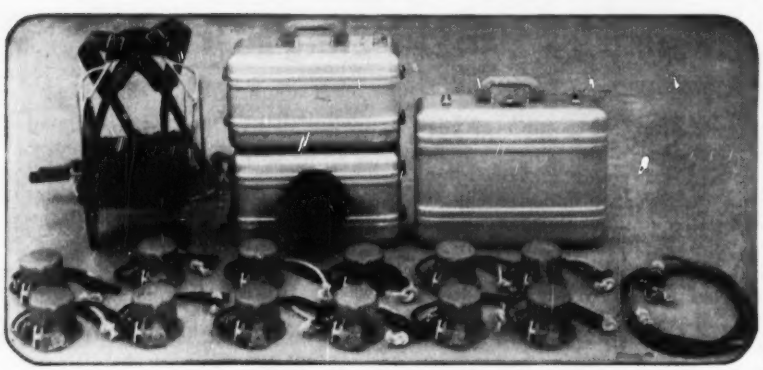

Now you can locate bedrock and plot its contour in minutes instead of hours. To learn more about this new and PROVEN method of bedrock finding without detailed and costly drilling, write 1333 *North Utica*

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the prestress at the inner face of the tunnel lining. Nominal jacking pressure is maintained for some time even during operation of the tunnel in order to allow increase of prestress in the event of further plastic deformation.

In certain very rough or split rock formations, it may be necessary to provide a sand-filled space between the tunnel lining and the rock formation. In this case the longitudinal prestressing slots for the flat jacks are installed at intervals of 120 deg. The simultaneous operation of these flat jacks causes fairly uniform radial compression for consolidating the rock formation and subsequent compression of the tunnel lining.

A typical example of the use of the new method of prestressing tunnel linings was the construction of the Reisach-Rabenleite tunnel in Bavaria, Germany. With an inside diameter of 16 ft, this tunnel has a total length of 3600 ft and an operating pressure of 365 psi. Jacking pressures up to 1470 psi were used in the flat jacks. The method was also used for the 7-ft 3-in. dia. south diversion tunnel of the Rosshaupten hydro plant in Bavaria. The use of this method on these jobs entailed a construction cost of only $2.78 psf of tunnel lining as compared to $4.70 psf for ordinary prestressed lining and $5.24 psf of reinforced concrete tunnel lining.

Dr. G. Jauch, Munich, Germany, is the designer of the new method.

International briefs . . .

• **Peruvian grain elevator**—The cornerstone was laid last month for a $3-million grain elevator at the port of Callao, Peru. Designed by McDonald Engineering Co., Chicago, Ill., the project's substructure is being built by Raymond Concrete Pile, New York. To accommodate a full ship at the site chosen for the bulk grain berth, dredging is necessary and since the port has been neglected for a number of years, the entire harbor is being dredged under contract with the Peruvian Navy.

• **Swiss nuclear center**—A laboratory and research center for the European Council for Nuclear Research will be constructed at Geneva in the next few years. Construction of the main buildings, a cyclotron and a proton synchroton are the first projects on the $28-million agenda which cover plans for the next seven years. The costs are to be shared by 12 European countries.

(*Continued on page 76*)

Water where it's needed

In every realm of water consumption Layne is on the job. The world's industrial giants in manufacturing, petroleum, textiles, chemicals, paper—wherever water is used in quantity—rely on Layne engineered and constructed wells and pumps. Cities and farms, too, turn to Layne for dependable, economical water supplies.

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Layne installs better water systems at less cost because Layne does the whole job. From initial surveys and test drillings to completed system and followup maintenance you deal with only one organization. Layne's 70 years of world-wide experience in every field of water supply equips us to serve you best.

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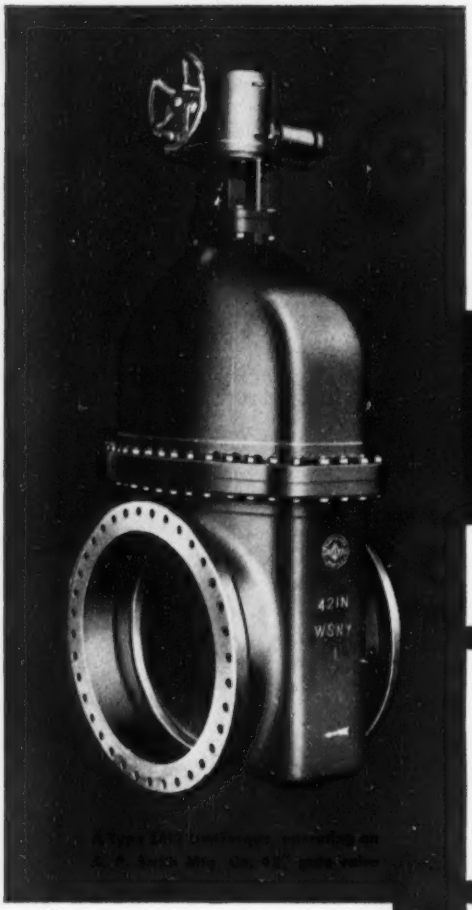

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One man can operate any number of Valves, at any distance, from a push button station centrally located.

A Philadelphia Engineer will gladly call and help you with your valve operating problems. Write us now.

Limitorque makes possible the centralized operation of valves in remote or hazardous locations from convenient and strategically placed control panels. Thus, this vital plant operating procedure can be handled by key employees, and is not dependent upon brawn alone.

Limitorque opens and closes any type of valve quickly and dependably. Valve stems, seats, discs, plugs and gates are fully protected from damage during closing cycle by the torque limiting mechanism. There are *many* exclusive design and construction features in Limitorque Controls, which are reasons for the world-wide preference for these "proved" Valve Operators.

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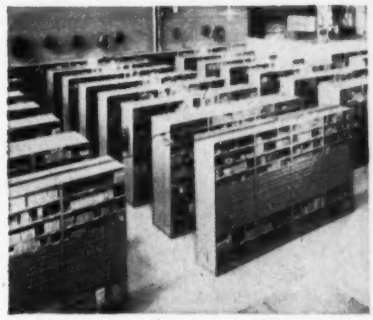
Construction Equipment Distributor Helps User to Bigger Profits

The construction equipment distributor has played an important part in helping to build the vast construction industry as we know it today. Too often the services of the distributor are taken for granted, but these services have much bearing on the contractor's profit and success.

The role of the distributor begins when a job is bid. He provides facts and figures on a moment's call on most any equipment. He stocks machines for prompt delivery. He knows job conditions within his territory and helps in



Parts-in-stock — a time-saving, cost-cutting Distributor service.

applying proper equipment for lowest operating cost. When a sale is made, he arranges the financial plan. Many a contractor has been given his start and guided down the path to prosperity by an intelligent and helpful distributor.

When the equipment goes to work, his role becomes increasingly important. The distributor's parts and service facilities can often mean the difference between profit and loss to the contractor. Genuine parts stocks are close to the job. Shop facilities are specialized for equipment service. Field service on-the-job adds countless hours of performance time. Distributor parts and service personnel bring factory approved methods to the equipment owner for lower costs and best results. Machine records are maintained to further speed customer service.

When you think of your equipment distributor, consider all of the things he offers to make the contractor's work more profitable. He is not only a selling agent, but an organization of specialists very closely geared to every phase of a construction project. Without the construction equipment distributor, the present day contracting industry as we know it could hardly exist. Hats off to one of the industry's most important groups!

LOOK AT THESE LORAIN-50 PROFIT BOOSTERS

HYDRAULIC COUPLING — Prevents shocks and stresses from backing up into mechanism and cables—reduces maintenance—increases output. No stall under any digging condition. Standard on only this 1-yard machine.

AIR CONTROLS — Air does the work on the "50" — crawler steering and Tread-Travel Lock use full air power. Air-assist available on hoist, crowd and retract.

4 CRAWLERS — Be "choosy" about your crawler. Select from standard, long, extra-long, and extra-long & extra-wide —to exactly fit your job. Rubber-tire mountings also available.

5 FRONT ENDS—Choose from shovel, crane, clamshell, dragline and hoe—all interchangeable. Your "50" can help you win many bids.

ANTI-FRICTION BEARINGS — Tapered anti-friction turntable rollers—anti-friction bearing mounted Swing Drums—anti-friction bearing mounted Hoist Drums.

Be "CHOOSY" when you buy a Shovel-Crane

Times have changed! Today, you can get most *any* brand you want—when you want it. Not long ago, perhaps you bought just any make of shovel-crane "because it was available". Now you can return to *selective* buying to get the most for your money.

In the 1-yard Lorain-50 "Series" shovel-crane class, as well as in the rest of the wide Lorain line, there are solid values and exclusive design features that pay off in profits. They are not just "gimmicks" to confuse the buyer—but are an honest-to-goodness combination of values that you won't find in any other 1-yard class machine.

Be *"choosy"*. Make sure your shovel-crane investment will pay you greatest profits. Choose from the complete Lorain line —from ½ to 2-yard classes—at your Thew-Lorain Distributor.

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THEW LORAIN. 1-YARD 50 CLASS

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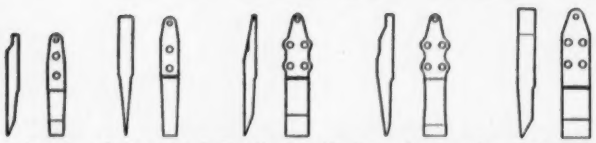


Types of Standard Teeth for Various Conventional Operations

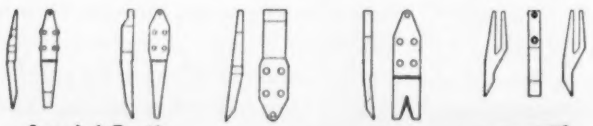
Corner teeth

Side cutting teeth

A bucket of recognized ability becomes a greatly improved "digger" when equipped with teeth of proper type and design.

Owen Buckets are designed to utilize the weight of the bucket to force the teeth into the material when dropped contributing to their reputation as exceptionally efficient digging buckets.

Owen teeth are designed especially for "deep penetration"—teeth that "grasp and hold"—teeth for "breaking down resistance at corners" to aid shell penetration—side teeth "to cut wall clearance" in trench excavation, etc.



Special Teeth

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INTERNATIONAL

• **Andean electrification**—Contracts for the construction of a $3.8-million thermoelectric plant at San Lorenzo, on Lake Maracaibo, Venezuela, have been awarded to the French firm, Societe de Grands Travaux, Marseille. The plant is the first of a series of installations of an Andean electrification program to cover the next 25 years. Construction of a hydroelectric plant on the Uribante River, near Santo Domingo, Venezuela, is the next project on the program. The Venezuelan Development Corporation heads the Andean electrification scheme.

• **Interamerican Highway Congress**—To be held in Caracas, Venezuela, next July, the sixth Interamerican Highway Congress is expected to center its attention on the lengthening of the Pan-American highway. At the organizing committee sessions held this month in Caracas, Dr. Tomas Guarida, President of the Central American Section, told the group that the highway will be completed from the U. S. to Panama by the end of 1954 at a total cost of $100-million.

• **Israeli sewage system**—A $6.5-million project for the extension and modernization of the sewage system of greater Tel-Aviv is being designed by the British engineering firm of Kirshaw & Kaufman, London. The scheme will involve the construction of a klinker brick and glazed pipe plant to supply sewage line materials for all of Israel's rapidly expanding towns. Of the $6.5-million, $2-million is to be earmarked for the purchase of machinery for the pipe plant, the pumps for the sewage system, machinery for eliminating and compressing wastes, and another plant for the production of artificial fertilizer.

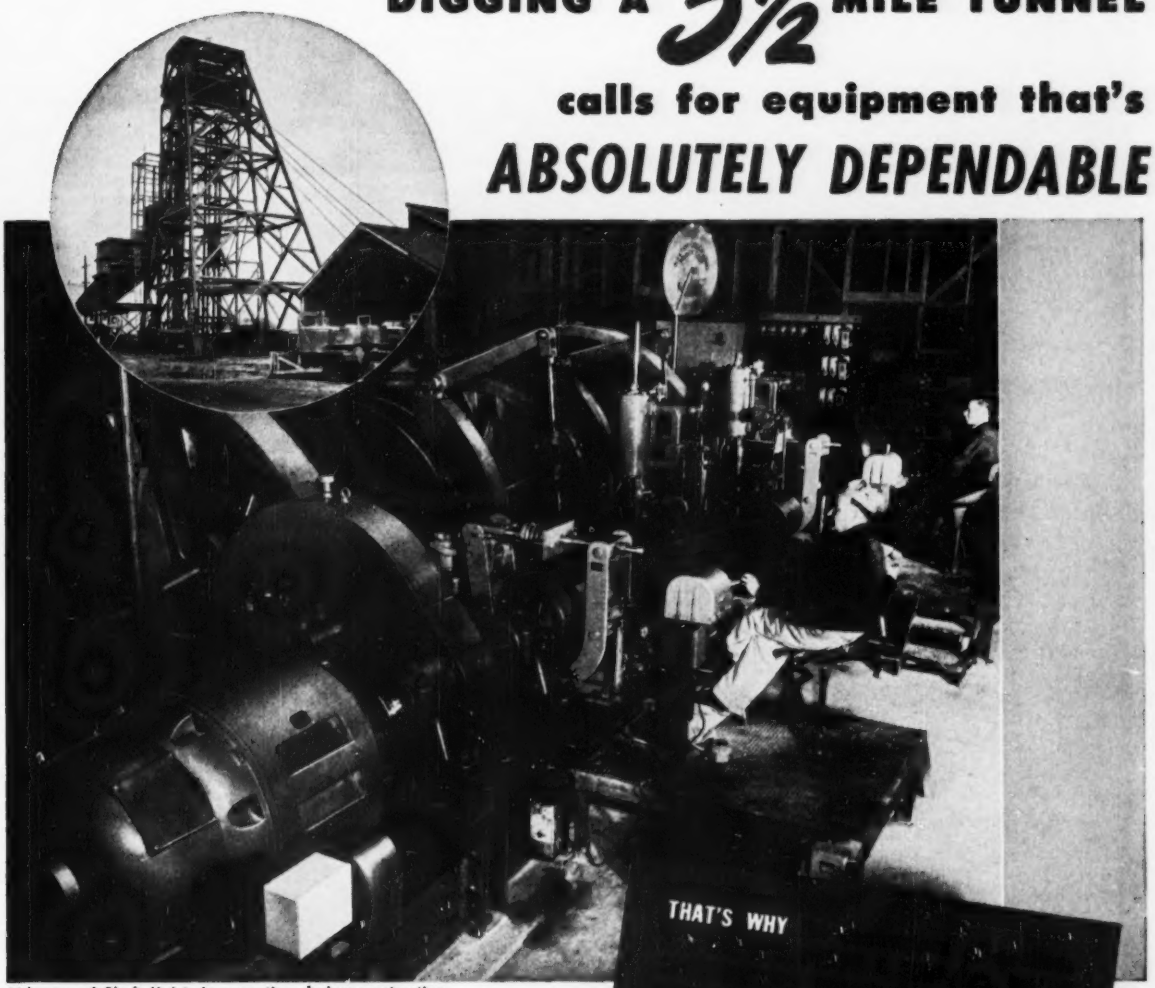
• **Salvadorean port**—Parsons, Brinkerhoff, Hall & Macdonald, New York, consulting engineers, have the contract to make preliminary surveys of port improvements for Puerte de Acajutla on the Pacific coast of El Salvador (ENR September 9, 1953 p.63). Estimated to cost $20 million, the harbor improvements will include a breakwater, railway, roads, and warehouses.

• **Viet-Nam bridge**—Tenders are invited by the Viet-Namese government for the construction of a 4,000-ft highway bridge across the Red River at Ranoi. Estimated to cost $6.9 million, the bridge is outlined in specifications available at the Viet-Nam Embassy in Washington, D. C.

DIGGING A 5½ MILE TUNNEL

calls for equipment that's

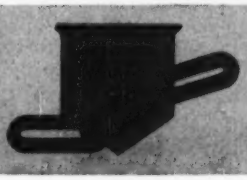
ABSOLUTELY DEPENDABLE



Lidgerwood Shaft Hoists in operation during construction of the hydraulic pressure tunnel for Ontario Hydro's Sir Adam Beck-Niagara Generating Station No. 2.

Because the job calls for absolute dependability, the contractors are relying on six LIDGERWOOD SHAFT HOISTS to raise an estimated 2,500,000 cubic yards of muck from 32,300 lineal feet of the 51′ diameter tunnel. These hoists will raise and lower men, equipment, steel and other supplies, so they *must* deliver top performance. LIDGERWOOD SHAFT HOISTS are a product of the 200 years of combined experience of the SUPERIOR-LIDGERWOOD-MUNDY CORPORATION.

For descriptive literature write to:



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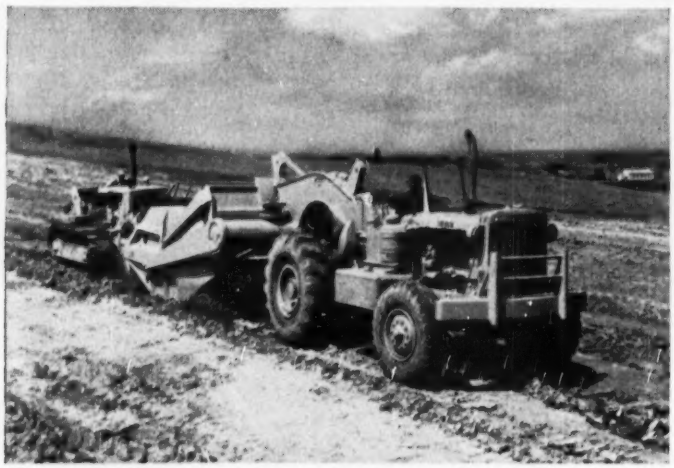
▲ Cat DW20 Tractor with No. 20 Scraper hauling fill at Lincoln Air Force Base. Cycle time on 2-mile round trip: 7 minutes. Average load: 18 yards.



▲ In tough, hard-to-excavate clay, a D8 Tractor push loads a DW20-No. 20 team. Average loading time: 1½ to 2 minutes.

▲ One of two Koehring excavators with 1¾-yard clamshells, each powered by a Cat D13000 Engine. A D318 powers a Koehring with a 1-yard bucket.

◀ One of many chores for Cat No. 12 Motor Graders—maintaining haul roads from apron to stockpile of aggregate and batching plant.

CATERPILLAR

New construction on the double for Lincoln Air Force Base

Contractor's concentration on big yellow equipment an important factor in maintaining schedule

D6 Tractor with No. 6S Bulldozer pulls primary finisher over 4-inch granular course for new apron. Ahead: a No. 12 Motor Grader spreading the course for the finisher.

A vital link in the nation's defense chain, Lincoln Air Force Base near Lincoln, Nebraska, is the scene of an expansion program which, among other projects, includes a new parking apron and barracks. Specifications for the apron call for a base with the top 6 inches of ground with 95% compaction, blanketed with a 4-inch granular course. The 132-acre area will be covered with 20-inch-thick concrete—enough for 128 miles of standard 2-lane highway. Prime contractor is the firm of Abel-Dobson-Robinson, Lincoln, Nebraska. Thiesen Bros., Osmond, is subcontractor for the dirt moving, which involves 161,000 yards of excavation for the apron and 193,168 yards for the barrack areas.

To put the program through on schedule, both contractors are relying heavily on Caterpillar-built equipment across the board—track-type and wheel-type tractors, scrapers, motor graders and engines. Production figures bear out their confidence in the rugged yellow units, with the Cat* DW20 Tractors and No. 20 Scrapers the key machines in digging, hauling and spreading fill. Typical performance of these high-speed, big-capacity teams: on a 1-mile haul, 7 trips a team an hour hauling an average load of 18 cubic yards. Loading time per team, with a D8 pusher, 1½ to 2 minutes. The material—tough, hard-to-excavate clay. Working 12-hour days, each DW20 unit handled more than 1000 cubic yards. Each DW10, on the same haul, handled more than 700 cubic yards. John P. Thiesen says: "We started in 1932 with a Best. Through the years we have stayed with Caterpillar-built equipment. The availability of parts and the fact that so many are interchangeable make it profitable for us to standardize on Caterpillar."

Other big yellow equipment on the job is putting out similar profitable production. For example, two Kochring excavators with 1¾-yard clamshells are each powered by Cat D13000 Engines. Handling 60% of the aggregate used in concreting the apron, each of these units produces aggregate for 172.50 cubic yards of concrete per hour. A D318 powers a Kochring with 1-yard bucket that unloads 10 to 16 cars a 10-hour day. Robert A. Dobson says: "We feel we get a more efficient operation and maintenance with Caterpillar* units. The operators and mechanics like and are more familiar with them."

Like Mr. Dobson and Mr. Thiesen, many other contractors have found that standardizing on Caterpillar pays off more ways than one. The familiarity of operators and mechanics with one type of equipment results in more work on the job and less maintenance in the shop. The ruggedness built into all units enables them to stand up day after day in the toughest kind of going. And prompt service from one dealer is another big factor in holding down time to a minimum.

Complete information and a demonstration are available from your nearby Caterpillar Dealer. Call on him for proof that it's profitable to standardize on Caterpillar equipment.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

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Take a tip

from this $850 tip-over

(A true story based on Company File #61474)

It was a simple enough job—loading our paver for transport. We'd never had trouble before. This time, the paver was part way loaded when the lowboy suddenly skidded on the uneven ground. We watched helplessly! The paver reared up, tipped, and came crashing down. We'd have been stuck for the $850.67 repair bill—except for our Contractors' Equipment Policy.

Suppose the paver had been *your* machine? Would the repair money have come out of *your* pocket?

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Our policy covers your equipment on the job . . . in transit . . . in storage. It protects you against loss by fire, theft, explosion, collapse of bridges—by collision, overturn, landslide, windstorm and other specific hazards. *Automatically for 45 days* it will cover additional contractors' equipment which you buy.

Don't wait until an accident happens! Call your Hartford Fire Insurance Company Agent or your insurance broker—*now*. Make sure you have cash for your repairs.

Year in and year out you'll do well with the

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RESEARCH

New lab planned for University of California

Construction of a new, $51,570 Soil Mechanics and Bituminous Materials Laboratory at the University of California's Engineering Field Station has been announced by university officials.

About half of the 4,000 sq ft of floor space will be used to test soil strength under varying dynamic and transient loads, to study methods of compaction and to find out why moisture collects under pavements.

Bituminous materials will account for the other half of the laboratory space and activity. Initial studies will concern asphaltic mixtures as they are used for paving and the change on them produced by curing and weathering over long periods of time. Physical analyses of asphaltic materials will also be made with particular attention paid to the stability of this type of paving under wheel loads and other dynamic loading in relation to various methods of compaction.

Air pollution investigated by University of Michigan

The Civil Engineering Department of the University of Michigan is giving increased attention to teaching and research in air sanitation.

The Engineering Research Institute and the School of Public Health are cooperating with members of the civil engineering staff in a research project on the atmospheric diffusion and penetration into buildings of allergenic pollens and industrial smokes.

E. Wendell Hewson is the principal investigator, with Profs. E. Boyce and J. Velz acting in an advisory capacity. The project is sponsored by the Geophysics Directorate of the Air Force Cambridge Research Center.

North Carolina State gets grant for waste studies

The National Science Foundation has awarded a $7,000-grant to the Department of Engineering Research, North Carolina State College, Raleigh, for a year's research on municipal and industrial wastes.

In the project, industrial and municipal wastes will be exposed to certain aerobic bacteria that will decompose them. The study will seek to determine what can break down these waste products and what the resulting chemical products will be.

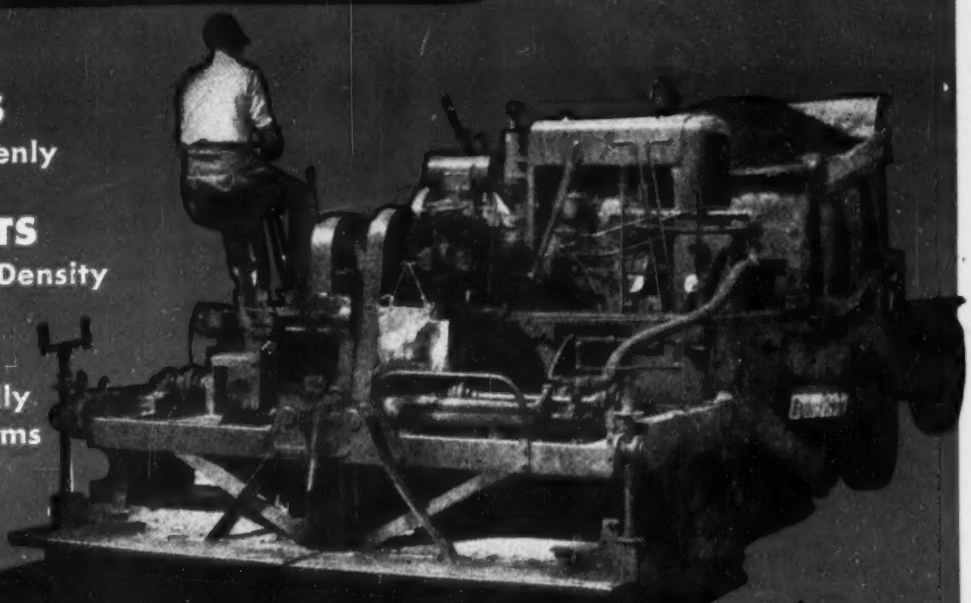
(*Research continued on page* 83)

"MAGIC-CARPET" MAKER

SPREADS
Material Evenly

COMPACTS
to Uniform Density

LEVELS
Automatically
Without Forms



Barber BG Greene

THE BARBER-GREENE TAMPING-LEVELING FINISHER

When the job calls for the highest quality bituminous surface, you'll do it best with the B-G Tamping-Leveling Finisher.

With this superbly designed machine, you are able to lay every type of mix — hot or cold — from clay stabilized gravel to high-type sheet asphalt. Whatever type mat you are laying, the B-G Finisher automatically measures the correct amount of compacted material — then simultaneously tamps, levels and strikes off to produce a ripple-free surface that is maintained under rolling and traffic. Because the material is compacted while it is being laid, you are assured of a surface of uniform density. And with the B-G leveling principle you compensate even for abrupt changes in the subgrade.

It will pay you to investigate this unequalled, universally preferred method of paving streets, highways, runways, parking lots, tennis courts and similar jobs. You will learn, for example, how the B-G Finisher saves truck time, minimizes rolling and reduces the size of crew. Investigate today!

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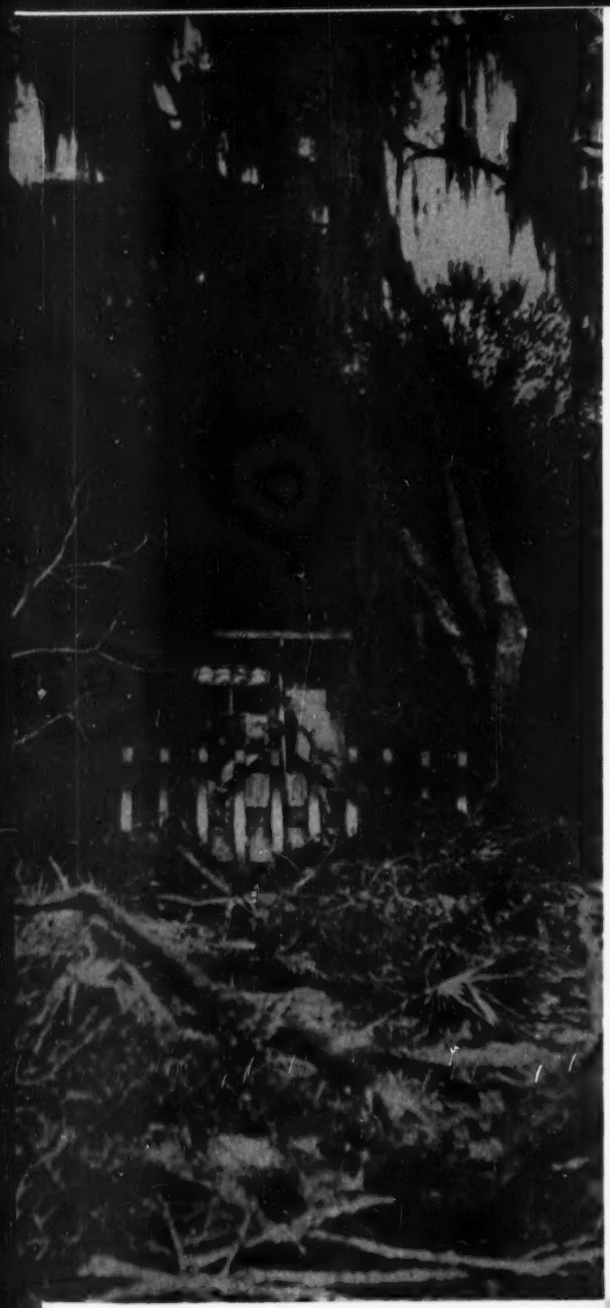


One of the most difficult jobs Contractor Finley P. Smith of Ft. Lauderdale, Florida, ever assigned his Tournatractor-Root Rake was clearing thick river-bottom jungle for grazing on the Watson Garrett ranch 15 miles northeast of Arcadia.

Work included ripping out angled brush and big palmettos, knocking over deeply-rooted pine and 1 to 2-ft. water oaks, and digging a ditch through soft sand to change the course of a stream. Veteran Foreman-Operator W. E. Miller described it as, "The roughest job I've ever been on and I've been clearing since 1932. You couldn't even walk through it." Rancher Garrett says that he had been trying to get this section of sandy swampland cleared for years, but no contractor with ordinary equipment could do the job economically. Tournatractor did!

Does twice the work of crawlers

In initial clearing, the powerful 186 hp machine took out 12 to 18" oaks in 20 to 30 seconds. "On this heavy clearing," says Operator Miller, "Tournatractor will do more work than any of the big crawlers. On light clearing, like palmettos, where I can use Tournatractor's speed, I can do twice the work of a crawler."

Clears 3 to 15 acres daily

Owner Finley Smith estimates Tournatractor can do 10 to 15 acres of light clearing a day . . . 3 to 4 acres of very heavy clearing a day. "On 7th Avenue in North Miami, Tournatractor cleared and disced 80 acres in 3 weeks," he says. "One of its big advantages is that it can pile brush so that it burns 100%."

Says Operator Miller, shown here starting to clear tangled river-bottom jungle, "Running this machine is not nearly so rough on a man as a crawler is. It doesn't jar you. The tires and seat take up the shock." Unit uses 60 to 65 gallons of fuel per 10-hour day. Daily greasing takes only 5 minutes. Complete greasing of engine and oil change takes less than 30 minutes. Lubrication time is cut 60% under crawler time.

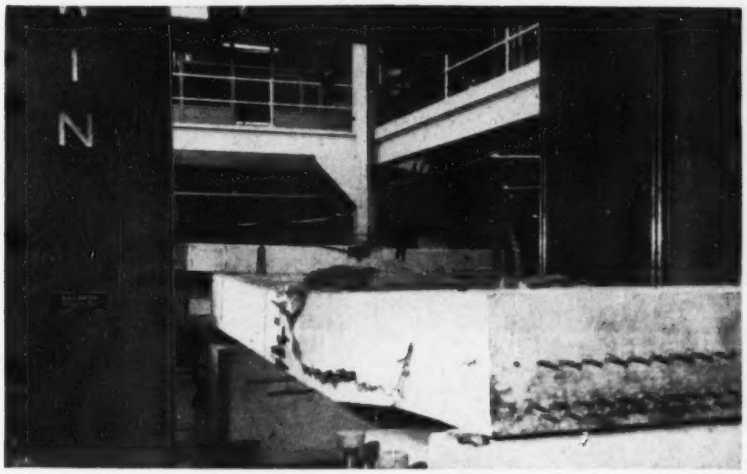
After 3000 operating hours, mostly in abrasive sand, Tournatractor tires still are in good condition. Big tractor drives job-to-job, saving time and truck and trailer expense. Rig drove 188 miles through busy winter tourist traffic from Ft. Lauderdale to Zolfo Springs in 12 hours, averaging better than 15 miles per hour.

Push-loads 7-yd. scrapers in 30 seconds

Smith uses a second Tournatractor for push-loading his 5 D Tournapulls. "This machine can handle all 5 of the 'D's' on almost any length haul," Smith says. "Most of the time, it takes less than 30 seconds to load."

Tournapull—Trademark Reg. U.S. Pat. Off.
Tournatractor—Trademark T-418-A-b

LeTourneau-Westinghouse Company
PEORIA, ILLINOIS



PRESTRESSED SLAB FAILURE occurred at 576,000 lb, or over three times E-72 design load of 180,000 lb. Three rows of prestressing strands, 61 in all, anchored by bond, can be seen protruding from the slab end.

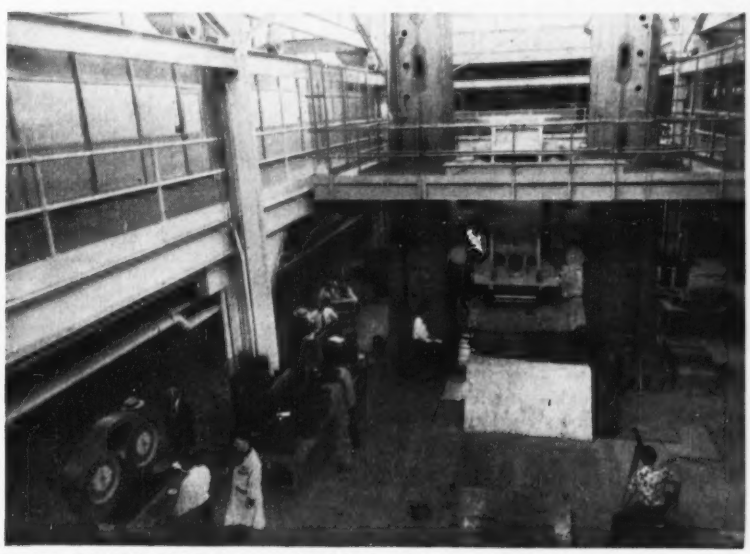
Tests show way to thinner slabs

18-in. railroad bridge slab supports over three times its design load—old slabs also tested

Tests conducted on the giant hydraulic presses of the Bureau of Reclamation laboratories in Denver will be used to determine the feasibility of using shallower slabs on railroad bridges.

According to the American Railway Engineering Assn., sponsors of the project, the test subjects were the largest prestressed and reinforced concrete slabs ever subjected to laboratory analysis in the history of American railroading. Included in the testing schedule were a prestressed design and two old and weathered reinforced concrete slabs.

A new prestressed slab, designed for E-72 loading (equivalent to 180,000 lb) was tested to destruction at 576,000 lb—more than three times its de-



TESTS OF OLD SLAB from a railroad bridge demonstrated that 45 years of weathering had not impaired the use of the reinforced concrete member.

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10 to 15 lbs.

★ SAFER
Have greater load capacity

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Work like hydraulic

★ COMPLETE
Scab, Tee-head, and Extension allow for every type of use

Try these shores on your next job. See for yourself . . . you'll be convinced that Symons Shores are FIRST CHOICE because of the savings they will mean to you in time and money.

Symons Column Clamps Save Money on Every Job

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Only two units—both alike, no loose parts

★ SIMPLE TO APPLY
Require only a hammer, and are completely adjustable

★ SQUARE COLUMNS
Automatically and accurately

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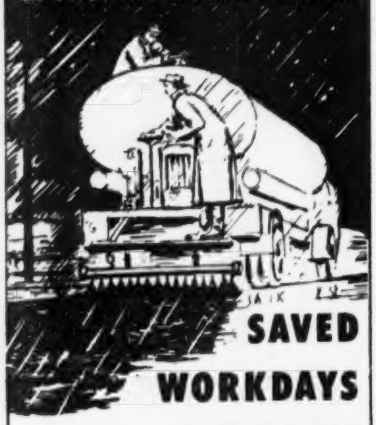

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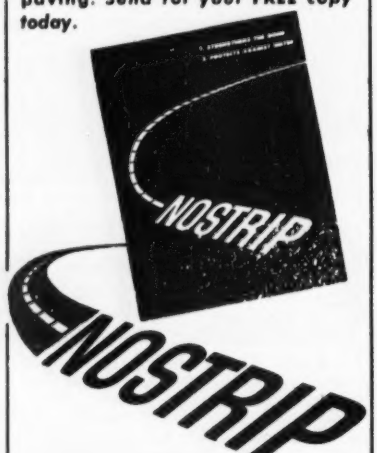

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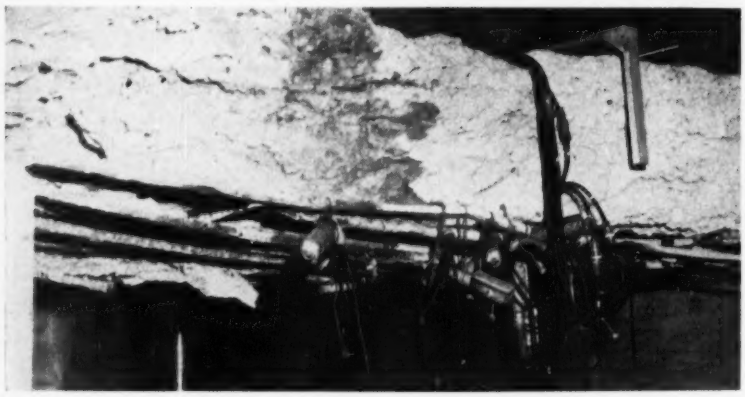


FAILURE AT 440,000 lb was not primarily responsible for exposed reinforcing, much of which had been done by weathering that had also reduced slab width as much as 6 in.

sign load. The slab measured 1½ ft thick, 6½ ft wide and 19 ft long.

For prestressing, spaced evenly at mid-depth were 21 seven-wire strands, each ½ in. in diameter, anchored to the slab by bond alone. Two more rows, each of 20 similar strands, were placed near the bottom of the slab and also anchored by bond.

The slab cables were tensioned to 144,000 psi prior to placing of concrete. One day after casting, the slab was steam cured for 24 hr, and at seven-day strength, the prestressing cables were released from their temporary anchorages. Made from a mix of 8½ sacks of cement per cu yd, the concrete developed a 28-day strength of 8,700 psi.

Tested at 28 days, the prestressed slab deflected 2.57 in. at the point of break. Prestressing strands had an ultimate strength of 240,000 psi, and none of the strands broke.

In another test, a cracked and weathered reinforced concrete railroad bridge slab broke under 440,000 lb on an 18-ft span, or over three times its design load of 120,000 lb. The 45-year old slab was taken from a railroad span at Chillicothe, Mo. During its period of use, weathering had reduced its thickness by as much as 6 in.

Of the other reinforced concrete slabs tested, one 24 in. thick, built with 4,700-psi concrete, failed at 556,000 lb, and another, 19 in. thick, built of 4,250-psi concrete, failed at 546,000 lb. These slabs were built to the standards of the AREA and the American Concrete Institute with an E-72 design loading.

Pavement comparison study to start soon in Oklahoma

Grading contracts were let in October by the Oklahoma Department of Highways for construction of four miles of divided highway on which the state plans to compare the qualities of portland-cement concrete pavement and asphaltic-concrete pavement. Construction of such a test road by the highway department was ordered by the state legislature last May. At the same time the legislature set up legislative and citizens' committees to observe the tests and report on it.

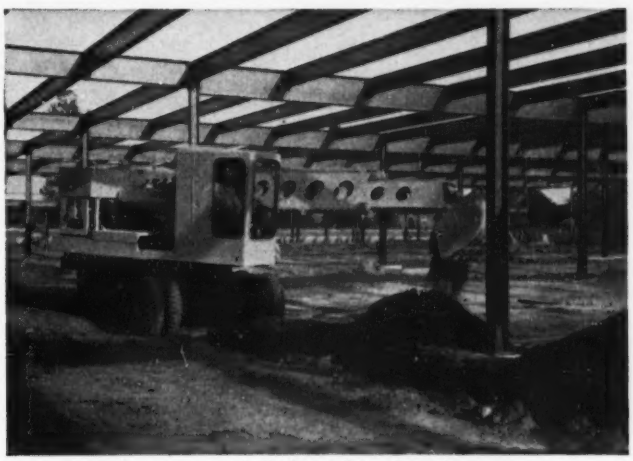
The resolution authorizing the study stated that "the people of the State of Oklahoma have come to the conclusion that because of high political influence in Oklahoma they are receiving an inferior type of road and losing the full value of money paid in taxes."

The site selected for the test is a few miles north of Oklahoma City where U.S. 66 and 77 intersect. Included is a braided type grade separation for the two routes. The new highway will carry a large volume of both passenger cars and heavy commercial vehicles.

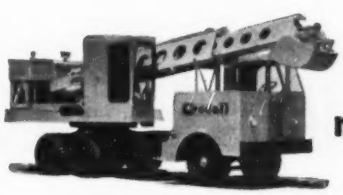
Two 24-ft wide pavements are to be laid, separated by a 30-ft median. The maximum grade is 3 percent, and the sharpest curve 2 deg. Concrete pavement will be laid on the west lanes of the south half of the project and on the east lanes at the north end. This arrangement will place both types of pavement over the same types of soil and both pavements will be subject to the same types and frequency of traffic.

The soils on this project are de-

Gradall—money-maker for contractors large and small!



A tight spot—a Gradall job! With its telescoping arm-action the Gradall works easily under the low roof of this building.



Gradall makes money for you on all these jobs and many more

- Trenching and back-filling
- Excavating
- Placing tanks, culverts, curbs, etc.
- Sloping and grading
- Ditch digging and cleaning
- Ripping and loading old pavement
- Hand finishing and clean-up

Large contracting firms, who can buy many different machines for big contracts, have proved the Gradall pays off on major projects. Gradalls do jobs no other machine can handle, and "hand-finish" work formerly confined to hand labor.

And they quickly find that a Gradall is no "specialist"! It invariably becomes a *permanent* part of their equipment, because it's *always busy*. It handles many "short run" jobs—eliminates the need for specialized (and often idle) machines—cuts the time and cost of cleaning up contracts with hand labor.

Smaller contractors, who must operate with one or two machines, go into business on a "bigger" scale with a Gradall With this multi-purpose machine they bid on *more* jobs—and more *complex* jobs—get jobs no other machine can touch. When work calls for accuracy it goes to the Gradall contractor because he doesn't have to depend on costly hand labor to get that accuracy. And Gradall works *fast*, so it's soon ready to speed to the *next* job. Gradall provides the very maximum of on-the-job time and profits!

Whether you're "big" or "small" in terms of the contracting business, it will pay you to arrange a field demonstration with your Gradall Distributor. He'll show you how a Gradall will *make money* for you!

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YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

Today many liability insurance companies are sustaining heavy losses.

A recent study of 125 typical policyholders showed that they had paid liability premiums totaling $1,005,337. And they had produced losses totaling $1,658,043!

Result: Liability insurance costs are rising at a phenomenal rate! . . . From a 5% or 6% of the contractor's payroll a few years ago to costs ranging from 15% to 90% today!

This is making contractors and insurance sources alike unhappy, irritable and poorer by the hour! What are the causes behind this growing crisis? What are the economics of the situation?

How has the changed attitude of the general public and the law courts during the past 20 years affected costs?

Above all, how can we (contractors and insurance carriers) work together to reduce the burden and ease the strain of this problem?

THE BAG! (a serious ad on a serious subject) by Mr. Friendly

To answer these vital questions we at American Mutual have devoted a major part of a recent issue of "Loss Control"* magazine to liability insurance alone!

***FREE OFFER!** Send today for your free copy of the liability insurance issue of "Loss Control." Here is practical information to help you control losses. Here are solutions to major problems confronting both contractors and insurance companies. The future cost of liability insurance or even its availability at any price could be dependent on these solutions. Write: American Mutual Liability Insurance Company, Dept. O-124, 142 Berkeley St., Boston 16, Mass.

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Service from salaried representatives in 78 offices! Savings from regular substantial dividends!

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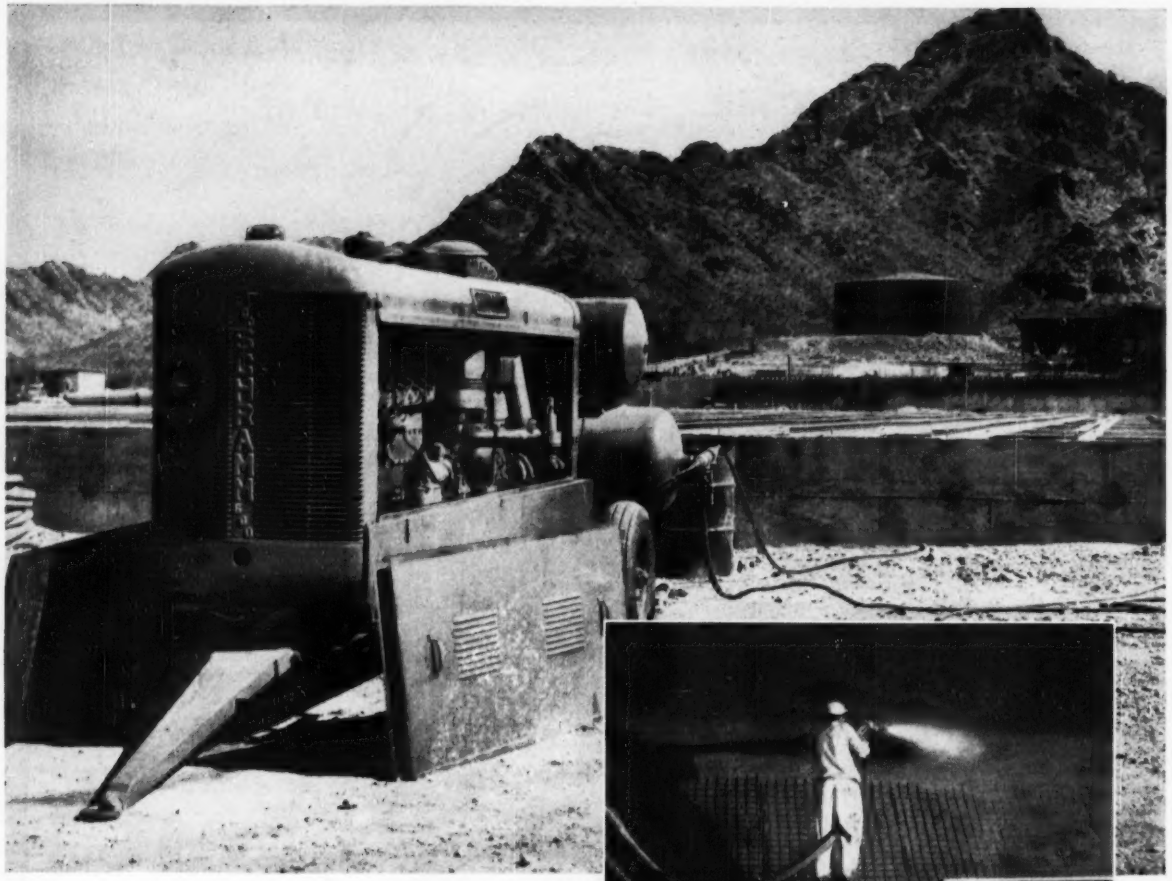

Schramm 600-c.f.m., Diesel Engine Driven Compressor owned by the Gunite Concrete & Construction Co., of Kansas City, Mo., working at new Squaw Peak Filter Plant in Phoenix, Arizona, providing air for application of Gunite.

Here's why you should use the *SCHRAMM MODEL 600*

FUEL SAVINGS UP TO 50% . . . Pneumastat control . . . Modern engine design . . . Proper operating speeds . . . Less horse power required by compressor . . . Super-efficiency compressor design.

SIMPLIFIED DESIGN . . . Fewer parts . . . Engine parts are interchangeable with compressor parts for lower maintenance . . . Cam operated mechanical intake valves provide greater efficiency.

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MORE PLUS FEATURES . . . Tool boxes large enough to carry complete assortment of tools . . . Engine and Compressor cooled by water and unit can be operated with doors in place . . . Dual fan belts.

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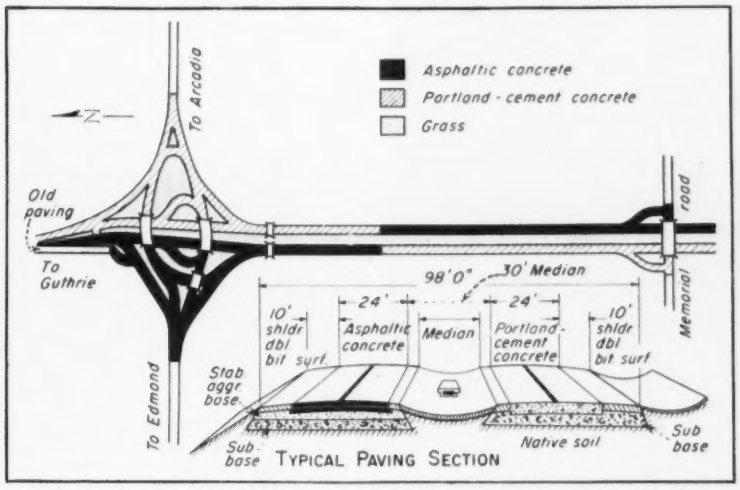

TWO TYPES OF PAVEMENT are to be laid on four miles of divided highway. Portland-cement concrete will be on the west lanes of the south half and on the east lanes at the north end, with asphaltic concrete on the opposing lanes.

rived from sandstones and shales. Those derived from the standstones are fine sandy loams that make an excellent subgrade material. They will form the subgrade on most of the project and are suitable for either type of construction without a subbase.

Clay loams derived from the shales will underlie about 2,000 ft of the new highway. These soils are of medium quality and probably will require about 6 in. of selected soil as a subbase for the flexible-type construction. A layer of sandy, non-pumping material will be required under the rigid pavement in this area.

Roadbed embankments are to be compacted to 95 percent of standard Proctor density, as called for in the highway department's standard specifications. The Asphalt Institute had asked for 100 percent, but the department, with concurrence of the Bureau of Public Roads, decided to retain the 95 percent requirement.

After the roadbed has been graded, soil tests will be made to determine the bearing value and general characteristics of the soil in place. With this information in hand, the Portland Cement Association and the Asphalt Institute will determine the thickness required for subbase, base and surfacing for the concrete and asphalt pavements, respectively, which, in their opinion, will be adequate for the anticipated traffic.

The contracts let recently were for grading, drainage, structures, and a detour. The grading and drainage contract went to W. E. Logan and Sons, Muskogee, for $273,902; and two bridge contracts for $70,295. Contracts for five other bridges went to Acme Construction Co., Oklahoma City, for $220,429. W. E. Steelman of Oklahoma City is to build a 2-mile detour for $76,661.

Construction of the test section is under the direction of C. A. Stodt, director, Oklahoma Department of Highways.

Design data for lightweight aggregate concretes readied

A coordinated study of low-strength lightweight aggregate "reinforced" concretes is provided in Housing Research Paper No. 26, "Design Data for Some Reinforced Lightweight Aggregate Concretes," to be issued by the Housing and Home Finance Agency.

Data for the study were prepared by the National Bureau of Standards under the sponsorship of HHFA's Division of Housing Research. The publication is available for 15 cents at the Superintendent of Documents, U. S. Gov't Printing Office, Washington 25, D. C.

For each mix, complete information is provided on the materials used, their preparation and proportioning. Strength tests are described and data provided on the compressive, flexural, shearing and bend strengths; modulus of elasticity; and shrinkage and thermal conductivity. Aggregates investigated include expanded shale, pumice and expanded slag.

The publication contains material on the application of lightweight aggregate concrete in the design and construction of buildings and provides design data and recommendations to permit a practical and economical evaluation of their use.

PERMANENT
pressure-creosoted piles provide New York City Housing Project with low-cost foundations

Arverne Houses, Long Island, New York. Tuck & Eipel, New York City, Consulting Engineers. Gulf Contracting Company, Brooklyn, New York, General Contractor. Photo by Fairchild Aerial Surveys, Inc., Long Island, New York.

THE seven apartment buildings that make up Arverne Houses, a New York City housing project, are resting on Koppers Pressure-Creosoted Foundation Piles. Koppers Piles are specified for many such projects where strength, permanence and low cost are important factors.

The 30 to 50-foot long piles, having 8-inch tips and 12-inch butts, were tested and found to be well within code limits.

You can count on pressure-creosoted piles for strength and long life. The pressure process drives creosote deep into strong timbers. This thorough treatment protects the timber from rot and termites—insures long, dependable service.

For permanent construction, engineering firms throughout the country know that they can rely on pressure-creosoted foundation piles which have been cut off above the water table, with tops thoroughly coated with creosote and capped in concrete. For more information on price and delivery call your nearest Koppers office or write:

KOPPERS COMPANY, INC.
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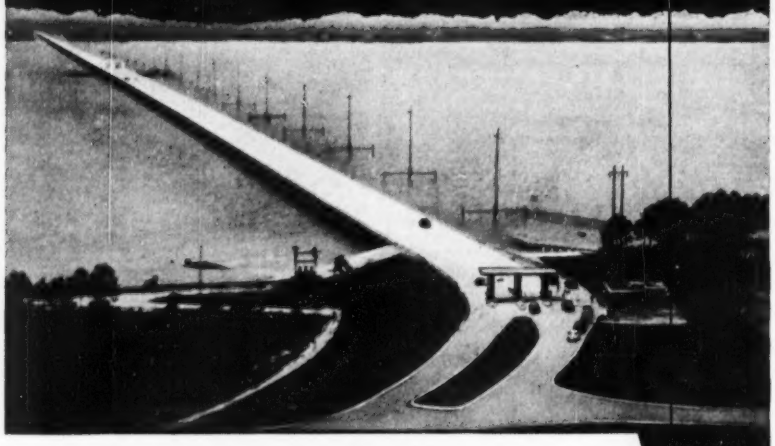
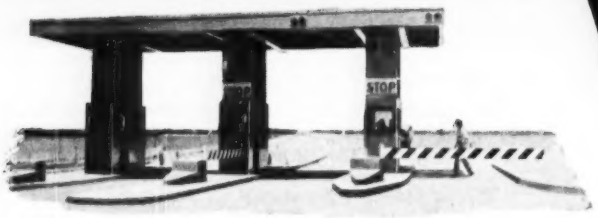
KOPPERS **PRESSURE-TREATED WOOD**

the new Bay St. Louis Toll Bridge features **TALLER & COOPER** toll collection booths and equipment





To assure the most efficient toll collection, the Mississippi Highway Commission chose Taller & Cooper Booths and equipment for their newest, most modern facility.

The story is the same on major toll facilities throughout the nation. Taller & Cooper prefabricated booths offer safe, efficient, weatherproof toll stations. Taller & Cooper scientific audit collection equipment guarantees the utmost in speed, accuracy and accounting dependability. The combination of the two provides an integrated, efficient system for all types of toll facilities.

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OBITUARIES

Dr. Carl E. Buck, 62, a public health expert who made a health survey of New York City in 1933, and was a professor of public health practice at the University of Michigan, died at Ann Arbor Nov. 21. In his 40 years of work in public health Dr. Buck labored in nearly every state in the union.

George E. Lewis, 61, structural engineer, Chief of the Buildings and Structures Branch, Engineer Section, Headquarters, Sixth Army, Presidio of San Francisco, died at Richmond, Calif. on Nov. 12. Previously he was with Headquarters, Ninth Service Command and Headquarters, Ninth Corps Area, Fort Douglas, Utah, and with the Morrison-Knudsen Co. at Pocatello, Idaho.

S. S. Senter, 75, former chief deputy in the Stark County engineer's office in Canton, Ohio, died in Arlington, Va., Nov. 21. He was formerly superintendent of buildings and bridges for the Wheeling & Lake Erie Railway and had held a similar position with the former Akron-Canton Youngstown Railroad. He had owned his own construction company for many years in Canton.

Earl A. Davis, 63, for the last 12 years an engineer with the Cleveland Division of the Ohio State Highway Department, died Nov. 19 in Cleveland. He was a graduate of Case Institute of Technology and worked for the Union Terminals Co. during construction of the Terminal Tower, Cleveland's tallest building.

Stephen W. McClave Jr., 72, co-designer of the approaches to the George Washington Bridge and the Lincoln Tunnel, N. Y. City, died at Englewood, N. J., Nov. 24. A graduate of Princeton University, his early engineering jobs included work on the Brooklyn-Manhattan tubes and the N. Y. Central R.R. terminal tunnels. With his brother R. P. McClave he formed the engineering firm of McClave & McClave, Cliffside Park, N. J.

George G. Dunlap, 59, Canton, Ohio, civil engineer who helped lay out the Canton park system, died Nov. 16. He was a graduate of Carnegie Institute of Technology, and was employed several years in the city and Stark County engineering departments. Since 1946 he operated the firm of George G. Dunlap and Son Co.

These Kodagraph Autopositive Intermediates

Protect vital drawings

You're looking behind the scenes at the American Locomotive Company, Ordnance Division, Schenectady, New York.

The prints you see streaming from the processing machine are positive photographic reproductions of M47 tank drawings. They're produced without a negative step . . . and under ordinary room light.

This fast, low-cost operation enables the Ordnance Division to protect thousands of M47 drawings against expensive wear and tear. For the drawings are filed away after the Autopositives are made. Then, because the engineering department of the Ordnance Division holds the design contract for the M47, these highly legible and durable intermediates are used to produce all the quantity prints required by the 29 manufacturers and government agencies involved in the distribution of engineering changes on the M47 tank.

Produce better prints

These Kodagraph Autopositive intermediates, used in place of the valuable original drawings, produce sharp, legible blueprints or direct-process prints time after time. Their dense photographic black lines—on an evenly translucent paper base—will not smear or lose density . . . which simplifies print production and eliminates reading errors and bottlenecks all along the line. *And another important point*—Autopositives are photo-lasting in the files . . . will not turn yellow or become brittle.

Advantages which you will appreciate, too, in your own operations. *And, remember, this is only part of the Autopositive story!*

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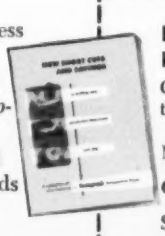
"THE BIG NEW PLUS" in engineering drawing reproduction

Learn how you, or your local blueprinter, can process this unique photographic intermediate paper at low cost . . . *with existing equipment;* how it is used to reclaim drawings . . . speed design changes in thousands of drafting rooms.



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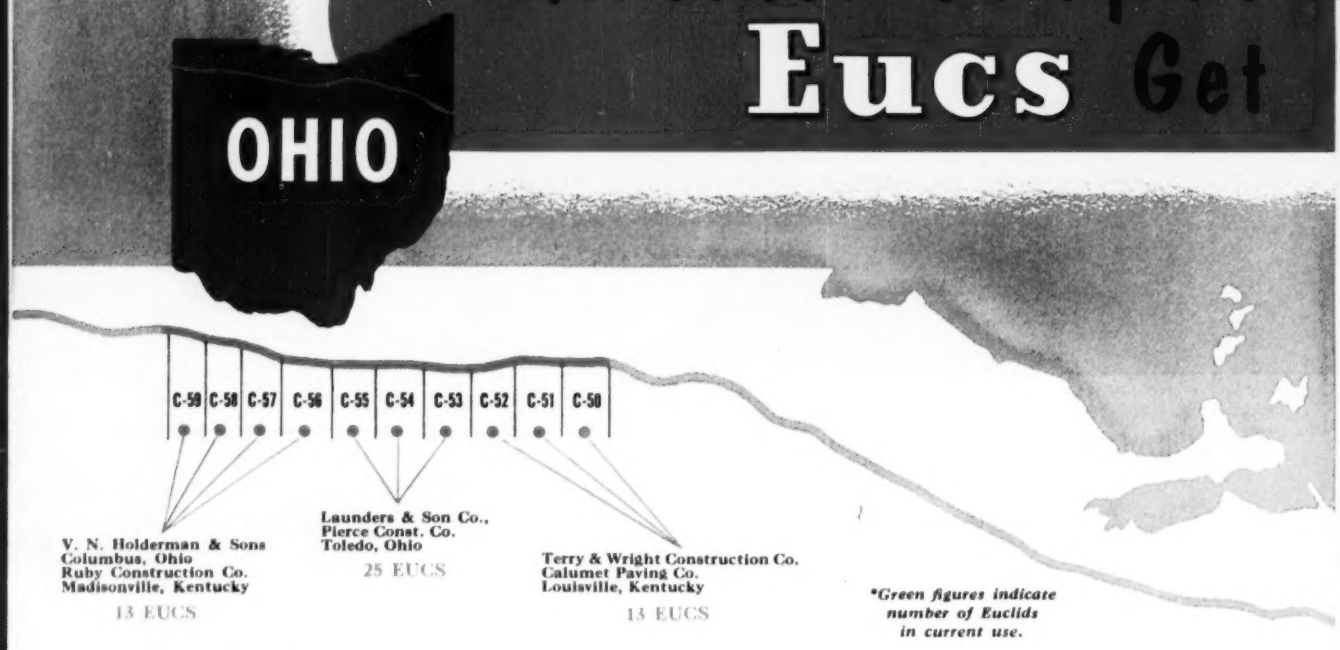


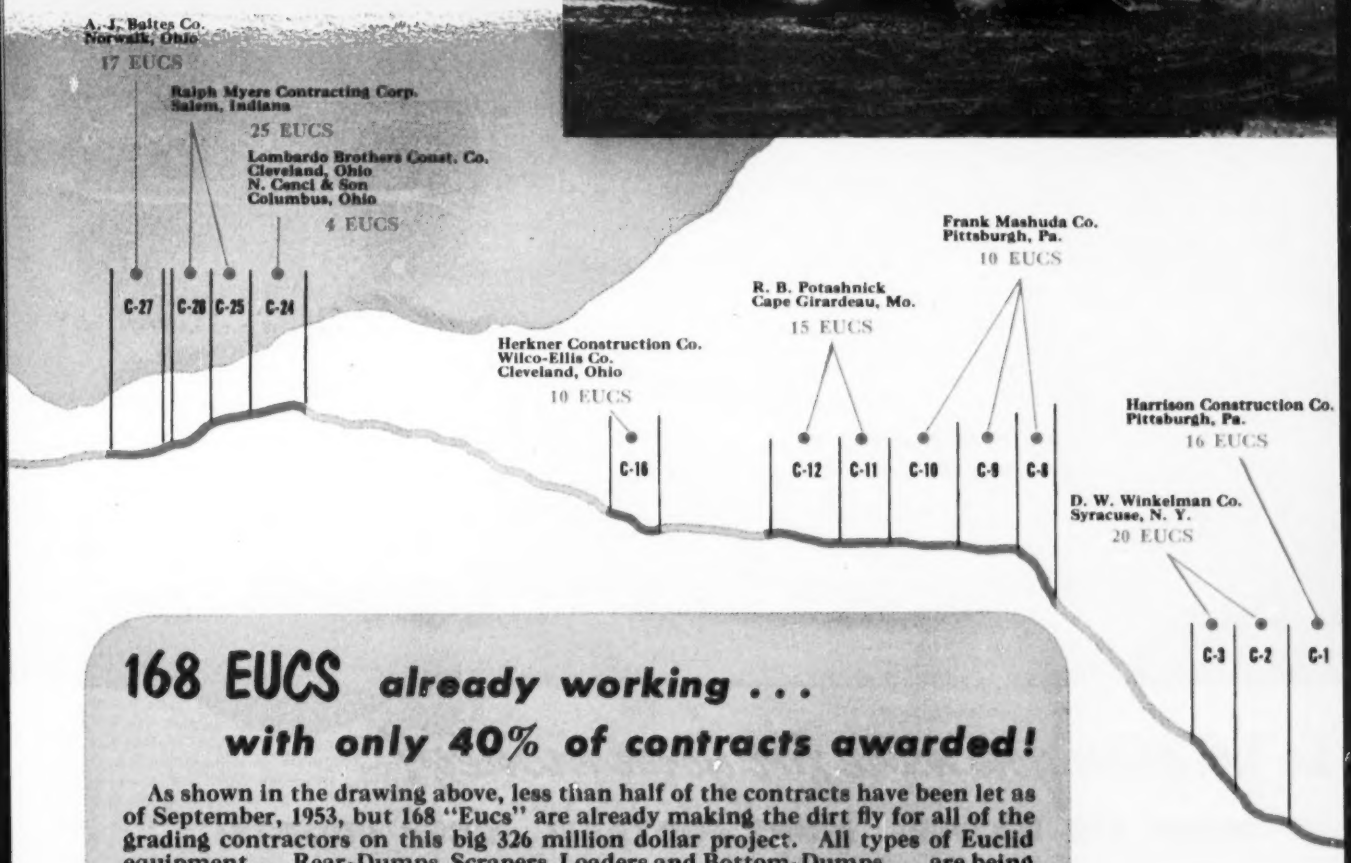
HISTORY REPEATS!

. . . it's "EUCS" on the Ohio Turnpike now!

The new 241 mile Ohio Turnpike, stretching across the state from Pennsylvania to the Indiana border is now under way. Although contracts for only about 40% of the project have been awarded, 168 "Eucs" are already moving earth and rock on the excavation and heavy grading, and many more will move on the job as the work progresses all along the way.

Just as most of the contractors on every new toll road built during the past 15 years . . . in Pennsylvania, New Jersey, Maine, West Virginia, New York, Oklahoma and others . . . have relied on Euclid equipment, contractors working on this newest turnpike are also counting on "Eucs" to get their earth moving done on schedule and at a profit.

. . and again the Call!



168 EUCS *already working . . .*
with only 40% of contracts awarded!

As shown in the drawing above, less than half of the contracts have been let as of September, 1953, but 168 "Eucs" are already making the dirt fly for all of the grading contractors on this big 326 million dollar project. All types of Euclid equipment . . . Rear-Dumps, Scrapers, Loaders and Bottom-Dumps . . . are being used according to the specialized requirements of every job along the way.

It's not mere coincidence that contractors on practically every big rush earth moving project . . . and on the smaller jobs, too . . . are almost unanimous in their selection of Euclid equipment. They know that Euclid is the pioneer and leader in the earth moving field and that "Eucs" are backed by a world-wide distributor organization with unexcelled parts and service facilities.

When your competitors have the benefit of high production at low cost provided by "Eucs," you need all of the profit making advantages that can be yours with Euclid equipment. Your distributor will be glad to supply all the facts, so get in touch with him right away.

The EUCLID ROAD MACHINERY CO., Cleveland 17, Ohio

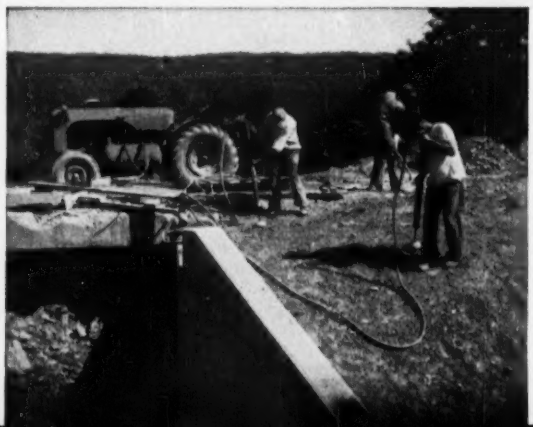
Le Roi *gives you more for your money!*

MORE AIR POWER! MORE FOOTAGE! MORE PROFITS!

Le Roi-CLEVELAND Sinkers are available in sizes from 18 to 80 lbs., with advantages you want. They use less air. They're easy to handle—operators don't tire easily. And they have what it takes to drill more feet per shift: Strong rotation. Powerful blow. High drilling speed.

Tractair is a combination 35-hp tractor and 105-cfm compressor that takes air power anywhere. Here, it operates two Le Roi-CLEVELAND backfill tampers. Can also be used for breaking, drilling — and, when equipped with front-end loader, for digging, loading, lifting, backfilling, snow-plowing, etc. This way, Tractair cuts costs and saves you the extra expense of special equipment.

Le Roi-CLEVELAND DR30 Wagon Drill puts deep holes down faster, with less air, than any other wagon drill available. Uses 4" bore Le Roi-CLEVELAND Drifter. Has strong rotation, powerful hole-cleaning ability, and high drilling speed with big bits. For shallow holes, the lightweight Le Roi-CLEVELAND DR34 is available.



Get air jobs done faster!

with Le Roi Airmaster Compressors and Le Roi-CLEVELAND Air Tools

There are 9 sizes of Airmasters — and 14 models—ranging from 60 cfm to 600 cfm. A 600-cfm diesel unit is shown here. It's got the capacity to operate two deep-hole wagon drills with plenty of air to spare for other tools.

Every Airmaster is powered by a heavy-duty Le Roi engine designed especially for compressor service.

Le Roi-CLEVELAND Paving Breakers are available in sizes from 18 to 80 lbs. They really pack a wallop—make short work of breaking up the hardest concrete. Protective air cushion in front end assures long life. Well balanced for easy handling. Operators like them — and get more done.

YOU make the most of air power—speed your work and keep costs down — when you team up Le Roi Airmaster Compressors and Le Roi-CLEVELAND Air Tools. Here's why:

First of all, a Le Roi Airmaster gives you more air capacity for less money. You can get an Airmaster that's *exactly right* for size — one that's not too big or too little for the job to be done — one that lets you do the most work at the least cost. That's because Le Roi has the industry's widest range of sizes to choose from.

You're ahead other ways, too: Airmaster's full-pressure system delivers *all* the air you call for, *when* you call for it. Conservative rating of the Airmaster engine provides ample power reserve — for lower fuel consumption, less maintenance, lower operating costs. Magneto ignition gives you quick, easy starting — saves time — lets you get going faster.

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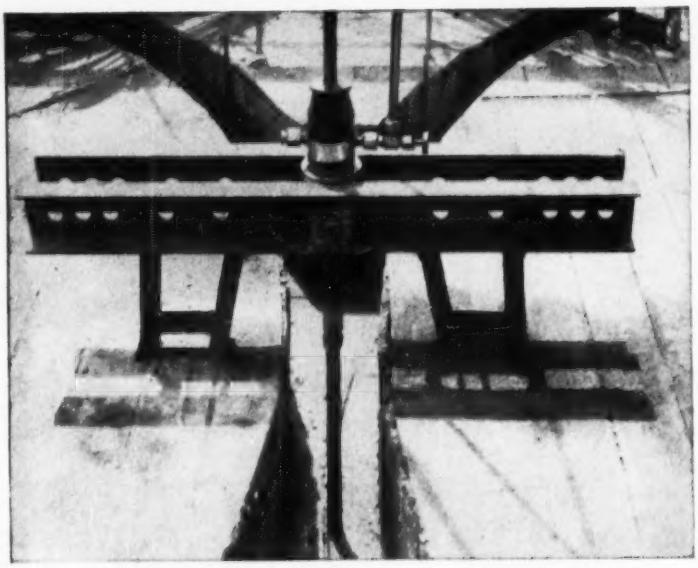

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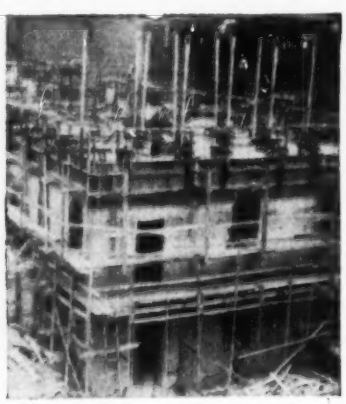

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Liability of contractor

A contractor was employed to dismantle some oil tanks. While the work was being performed, one of the workmen stopped in his work to light a cigarette and threw the match on the ground. The ground was soaked with oil and a fire ensued which destroyed the tanks and the oil therein.

The party for whom the work was being done brought an action against the contractor to recover the damages sustained as a result of the fire and obtained a judgment which judgment was affirmed on appeal.[1]

The appellate court in its opinion stated: "There is of course an implied undertaking in all building and construction contracts "to perform the work in a proper and workmanlike manner', and 'a builder is responsible to his employer for defective performance.' 9 Corpus Juris, 749 and 751, and cases cited in notes 85 and 87."

(1) Maloney Tank Mfg. Co. v Mid-Continent Petroleum Corp., 49 F. 2d 146.

Conflict between written and printed contract

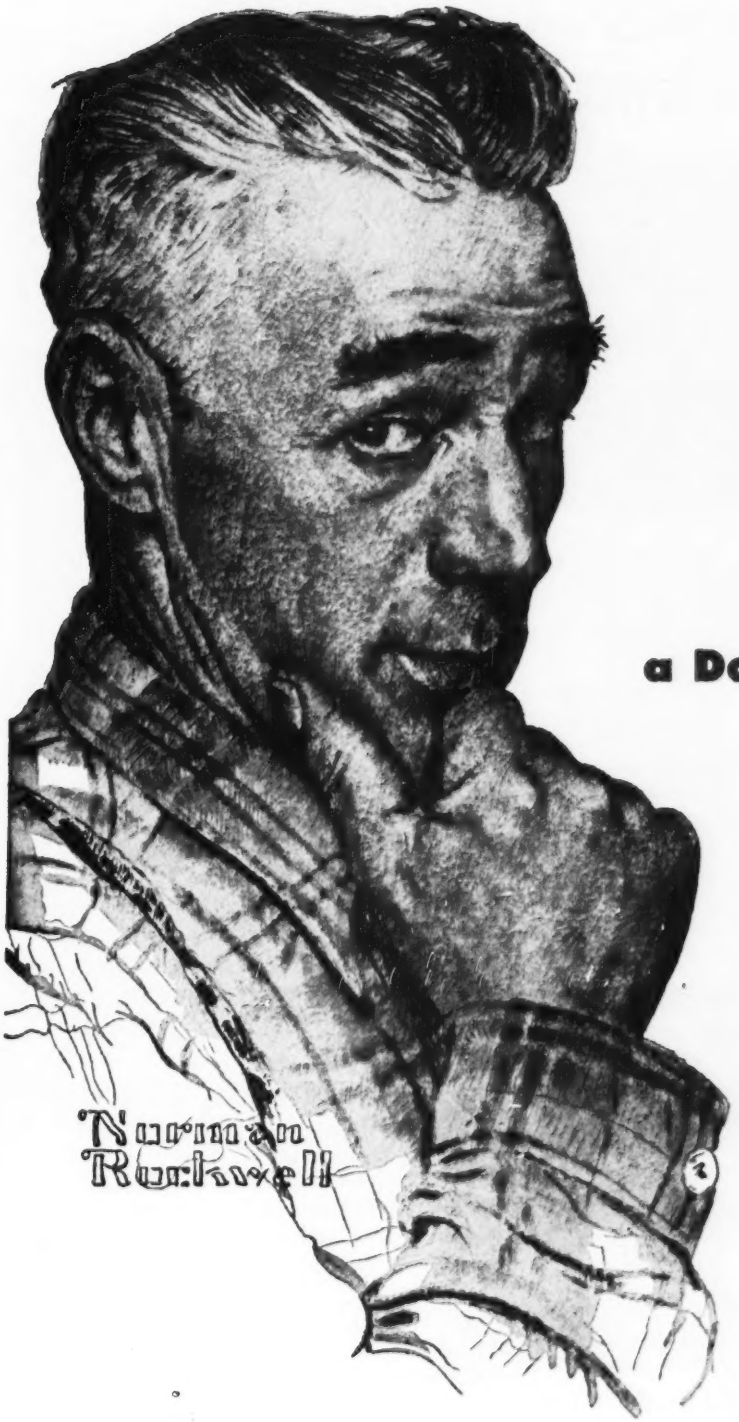
It is well settled law in the interpretation of contracts that where parts of the contract are in writing and other parts are printed, in case of conflict, the written parts of the contract will prevail. Also, where a clause is written on the face of the contract that is inconsistent with a printed one upon the back, the written clause will be accepted as expressing the intention of the parties. The written portion of a contract prevails over printed parts where they cannot be reconciled.[1]

(1) Mc Daniel v Georgia Consolidated Contracting Co., 110 F. Supp. 751, affirmed 202 F. 2d 748 and numerous cases there cited.

Work must be done in workmanlike manner

"Where a party contracts to build a building for a specified purpose, the law reads into the contract a stipulation that the building shall be erected in a reasonably good and workmanlike manner and when completed shall be reasonably fit to the intended purpose. 13 Corpus Juris 560."[1]

In the above case the contractor agreed to erect a garage with a concrete floor. The floor as built was ruined by frost. The contractor brought the action to compel the owner to accept the garage as built. The trial court granted the contractor judgment on the ground that the



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owner did not specify any depth for the foundation nor did it provide that the concrete floor should not be laid during freezing weather. The judgment was reversed by the appellate court.

"It is the duty of the builder to perform his work in a proper and workmanlike manner. . . . This means that the work shall be done in an ordinarily skillful manner, as a skilled workman should do it. . . . There is an implied agreement such skill as is customary will be used. In order to meet this requirement, the law exacts ordinary care and skill only. . . . manner of the best builders not required in absence of specifications."[2]

(1) Minemount Realty Co. v. Ballentine, 162 A. 594, 111 N.J. Eq. 398.
(2) Moss v. Best Knitting Mills, 130 S.E. 635, 190 N.C. 644 and numerous cases there cited.

Pay for extra work

"A builder is entitled to compensation as under an implied contract where the extra work is done with the knowledge of the owner, who is also aware that the builder expects additional pay therefor. 17 C. J. S., Contracts, Section 371, pages 845, 850, notes 17, 75."

The fact that the contract provides that orders for extra work must be in writing does not necessarily bar recovery for such work.

"'A written contract may, in the absence of statutory provisions requiring a writing, be modified by a subsequent oral agreement.' 17 C. J. S., Contracts, sec. 377, page 865, note 36.

"To the same effect is 12 Am. Jur. 778; Morgan v. Firestone Tire & Rubber Co., 68 Idaho 506, 201 P. 2d 976; Champion v. Hammer, 178 Or. 595, 160 P. 2d 119-123."[1]

(1) United States v. Slater, 111 F. Supp. 418, U. S. District Court of Alaska, March 31, 1953.

Basis for compensation

Where work is to be done on a unit-price basis, payment for additional quantities of work will as a general rule be made on the basis of the contract stipulated prices. Where however, the contractor is called upon to perform work for which no unit price is set forth in the contract, payment must be made on the basis of the fair and reasonable value of the work done or materials furnished.[1]

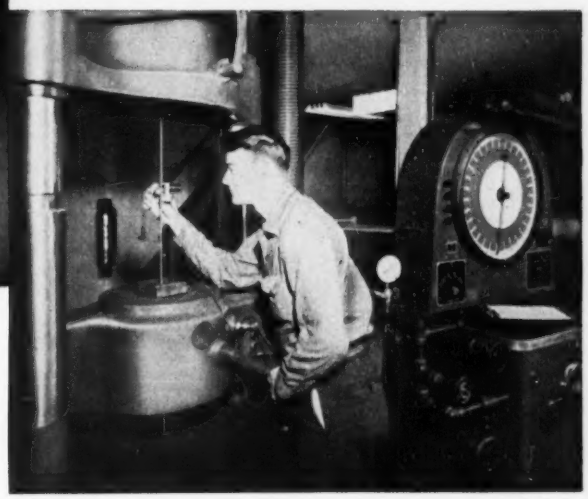
(1) Keystone Structural Co. v. Link-Belt Co., 265 F. 320, affirmed 270 F. 705.

(These summaries of court decisions are prepared by J. Vernon Werbin, New York attorney and civil engineer.)

. . . a good pipeline

is the sum of good parts . . .

▲ *Testing the compressive strength of a concrete cylinder*



Testing the tensile strength of steel reinforcing wire ▶

The finest design and the most accurate workmanship cannot result in a superior product *unless* the materials used are of the highest quality. That's why Lock Joint assures the excellence of each of its pipes by constantly testing both the finished product *and* the individual materials used.

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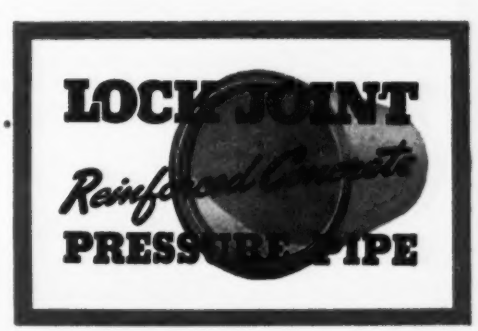

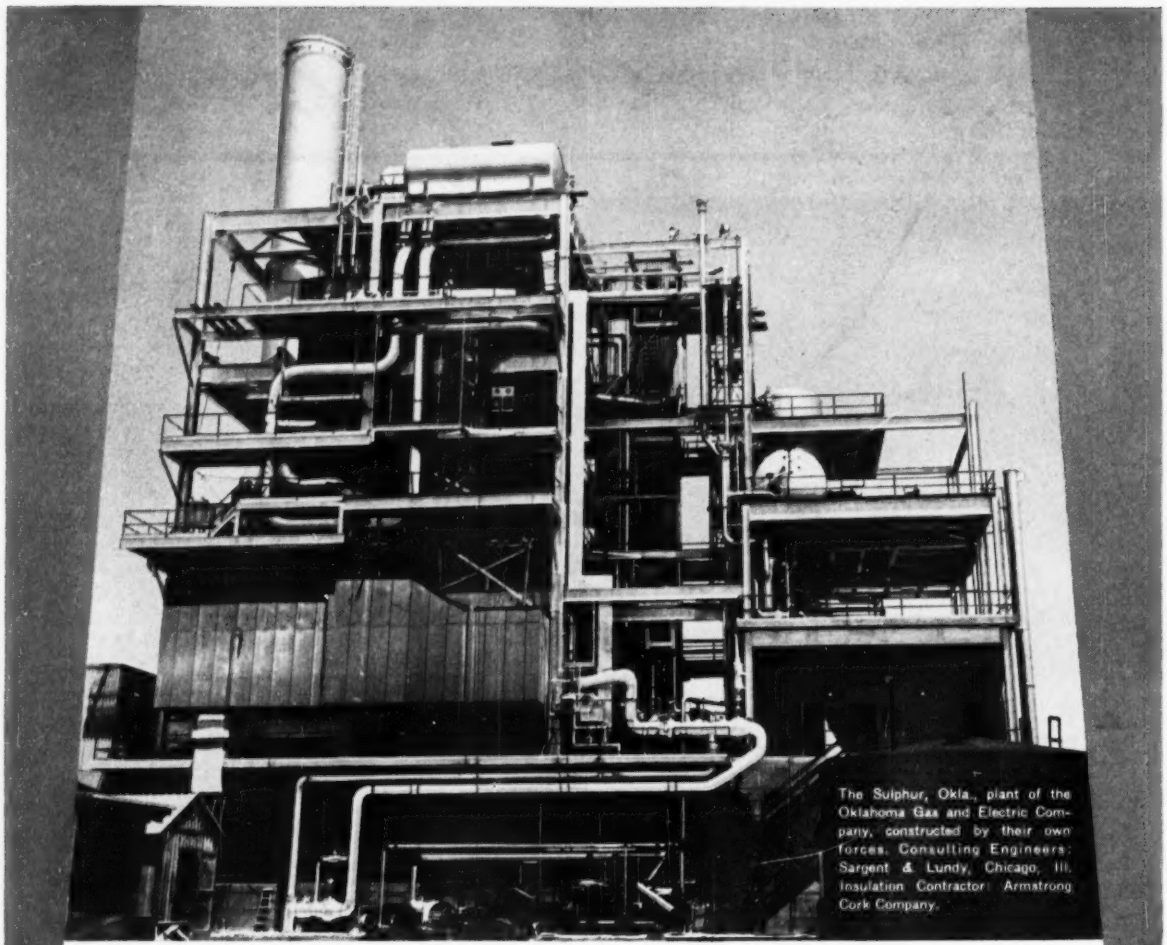

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BOOKS

Civil engineering history

A History of Civil Engineering: An Outline from Ancient to Modern Times —By Hans Straub. 258 pp. English translation by E. Rockwell, Leonard Hill, Ltd. London, England. Price 25s.

This is a translation, and an excellent one, of a most interesting book originally published in German in Basel (Verlag Birkhäuser) in 1949.

The author's interest has centered in "the gradual development of the common conceptions and methods of structural analysis."

The general plan followed by Mr. Straub is that of first briefly summarizing the major constructions of the great historical periods—The Ancient World, The Middle Ages, The Renaissance, etc.—and then reviewing in far more detail the development of structural knowledge and understanding in its influence and effect on the design and character of these works. The book thus becomes primarily a critical appraisal of the influence of structural mechanics on the scope, the growth, development and character of civil engineering, and to a lesser degree, architecture.

Needless to say our knowledge of the extent of earlier understanding of structural mechanics is far from complete. That earlier workers developed a surprising, but purely qualitative structural skill, based on experience and on almost uncanny structural judgment, is made clear when we realize that more exact, quantitative knowledge has been almost entirely a product of the last hundred years. There comes to mind, for example, the ponderous, massive Pont du Gard, the famous Roman aqueduct of ancient Nimes in the south of France, and the slender, daring Segovia aqueduct in Spain of a century later. Here is structural progress and development streaming entirely from craftsmanship experience with stone—greater confidence resulting in far less "over-design" and based on actual working with the available materials and the structural form involved. Centuries later the culmination of such experience, knowledge and accumulated judgments in the skeleton stone construction of the Gothic cathedrals resulted in what is certainly one of man's greatest structural achievements.

Indeed, one may question whether the lack of the more exact quantitative knowledge of modern structural mechanics was a serious handicap to the civil engineer of earlier ages. It seems

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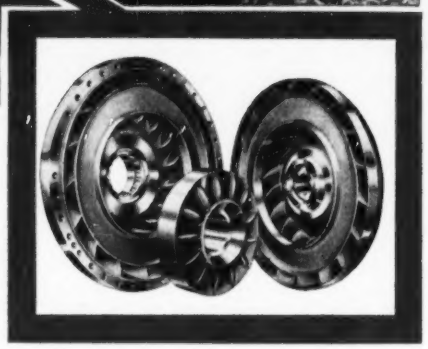

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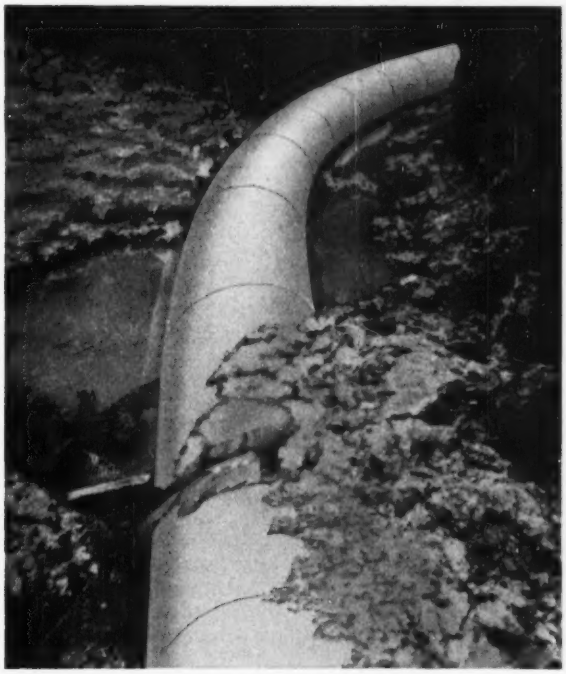

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Second Section Supplied:
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12000 lineal feet — 42″ bore

CONTRACTORS:
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Second Section: Wiley N. Jackson, General Contractor, Roanoke, Va.

CONSULTING ENGINEERS: Alvord, Burdick & Howson, Chicago, Ill.

ASSOCIATE ENGINEERS: Mattern, & Mattern, Roanoke, Va.

IN GENERAL CHARGE: John L. Wentworth, Director of Public Works, Roanoke, Va.

Right along the river is where Roanoke's new trunk interceptor lines had to go. Stopping infiltration was the big problem. The ditch was extremely wet. The pipe bed was shifty and uncertain. The city did not want to treat infiltrated water at the new disposal plant. Tight joints were a "must." Getting them was a tough proposition.

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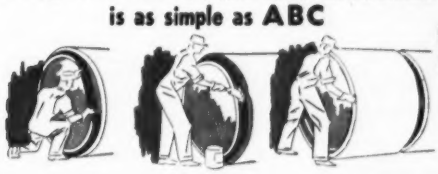

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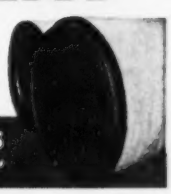

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BOOKS

quite clear that the advent of new construction materials—first, cast iron, then wrought iron, and then steel and reinforced concrete—gave an importance to more exact structural knowledge which it did not possess in the earlier long ages of stone and timber. We would argue, in short, that the great structures of today owe fully as much to the development of new materials as to the growth of structural understanding. As far as we are aware, no basic structural form, until the advent of the idea of continuity and of the rigid frame in modern times, may be claimed as the offspring of structural mechanics. And even these concepts resulted primarily from the search for more efficient, economical construction.

As the author points out, some basic understanding of geometry and arithmetic on the part of the engineer has been essential from ancient times in connection with surveying and also the planning and design of engineering works. The basic principles of structural mechanics have resulted largely from the speculations of physicists and mathematicians. The author traces with great skill and strict impartiality the development of these understandings and their translation into improved methods for structural design.

Mr. Straub has produced a most interesting and thoughtful book in a long neglected field, but he has covered, however, only one aspect of the long history of civil engineering. In our opinion the advent of new materials, the growth of new needs and demands and the economic factor, the search for more economical and effective construction, have been even more compelling forces in the evolution of our profession than the growth of structural knowledge and understanding.—*Reviewed by* JAMES K. FINCH, *Dean Emeritus of the School of Engineering, Columbia University, Lakeside, Conn.*

New engineering books

THE PRINCIPLES AND PRACTICE OF SURVEYING. VOLUME II, HIGHER SURVEYING—Seventh Edition—By Charles B. Breed and George L. Hosmer. 675 pp. John Wiley & Sons, 440 Fourth Ave., New York 16, N. Y. $7.00.

STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES—American Association of State Highway Officials, Sixth Edition. 328 pp. Published by the association, 917 National Press Building, Washington 4, D. C. $4.00.

(*Continued on page 107*)

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3. Clevelands cut fast . . . real mechanical efficiency, not brute force, for speed even on the tough jobs.

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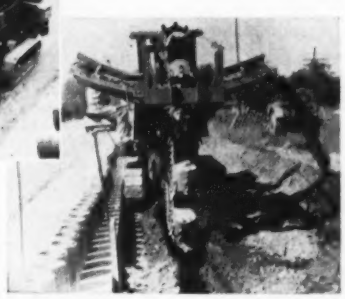
5. Clevelands are *versatile* . . . cut your tile trenches—dig *all* kinds of trench—give you high production at low cost—with minimum of service and repairs—day after day—year after year.

TRUCK LOADING



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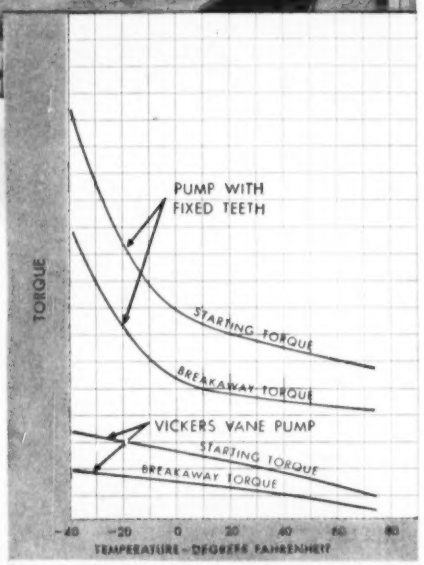
When Tractor Hydraulic System has a VICKERS® Balanced Vane Type Pump

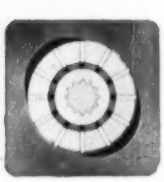
Under the very best conditions, cold weather puts a strain on starting equipment. Every part of the engine is stiffer, and the cold seriously decreases the power of the starting battery. If the hydraulic system has a pump with fixed teeth or lobes, this starting load may be seriously increased above normal.

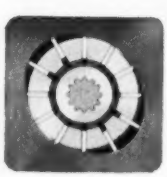
Vickers Balanced Vane Type Pumps *start at practically no load.* At rest and at normal starting speeds, the sliding vanes are retracted . . . only after the engine fires do the vanes extend and pumping begins. As a result, cold weather starting is much easier when a Vickers Vane Type Pump is used.

Get in touch with the nearest Vickers office for full information.



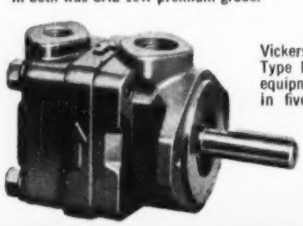
Curves based on comparative tests of a Vickers Vane Type Pump and an equal capacity pump with fixed teeth. Oil used in both was SAE 10W premium grade.





(Left) Schematic diagram of Vickers Balanced Vane Type Pump showing how sliding vanes are retracted at normal engine cranking speeds. No oil is pumped and there is practically no starting load.

(Right) Similar diagram of Vickers pump showing how pump vanes are extended when engine is running. Pumping then begins and continues at all engine speeds.



Vickers Balanced Vane Type Pumps for mobile equipment are available in five basic sizes, 15 normal delivery ratings and a variety of mountings. Ask for new Catalog M-5101.

6628

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BOOKS

SIMPLIFIED DESIGN OF ROOF TRUSSSES FOR ARCHITECTS AND BUILDERS—By Harry Parker. 278 pp. John Wiley & Sons, 440 Fourth Ave., New York 16, N. Y. $4.00.

INDUSTRIES FOR SMALL COMMUNITIES, With Cases from Yellow Springs—By Arthur E. Morgan. 112 pp. Community Service, Inc., Yellow Springs, Ohio. $2.00, Paper bound, $1.50.

SAUDI ARABIA—Second Edition—by K. S. Twitchell. 231 pp. Princeton University Press, Princeton, New Jersey. $5.00.

FIELD MANUAL OF SOIL ENGINEERING—Third Edition—Michigan State Highway Department. 368 pp. Michigan State Highway Department, Contract-Estimate Engineer's Office, Lansing 13, Mich. $4.50.

Reports and pamphlets

MAPPING AND SUBSURFACE EXPLORATION FOR ENGINEERING PURPOSES—Bulletin 65, Highway Research Board, Washington 25, D. C.

RELATION OF SHRINKAGE TO MOISTURE CONTENT IN CONCRETE MASONRY UNITS—Housing Research Paper No. 25, Superintendent of Documents, Washington 25, D. C. 20¢.

EFFECT OF AGING ON THE SOUNDNESS OF REGULARLY HYDRATED DOLOMITIC LIME PUTTIES—Building Materials and Structures Report 127. Superintendent of Documents, Washington 25, D. C. 15¢.

CONCRETE COLUMN DESIGN CHARTS FOR COMBINED AXIAL LOAD AND BENDING—By William N. Mason. W. N. Mason Company, P. O. Box 408, Douglas, Ariz. $3.00.

RECOMMENDED BUILDING CODE REQUIREMENTS FOR VERMICULITE PLASTERING, ACOUSTICAL PLASTIC, FIREPROOFING AND CONCRETE—Fourth Edition. Vermiculite Institute, 208 South LaSalle St., Chicago 4, Ill.

AMERICAN STANDARD PRACTICE FOR STREET AND HIGHWAY LIGHTING—Illuminating Engineering Society, 1860 Broadway, New York 23, N. Y. 50¢.

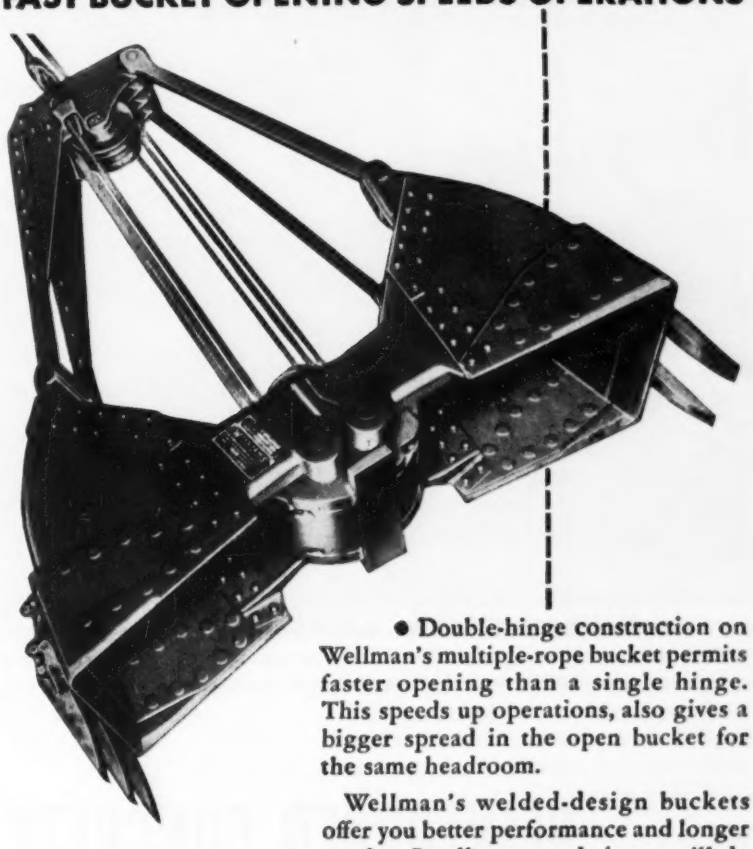
RECOMMENDED PRACTICE FOR SUPPLEMENTARY LIGHTING—Illuminating Engineering Society, 1860 Broadway, New York 23, N. Y. 50¢.

REVIEW OF LATEST DEVELOPMENTS IN OUTDOOR AIR POLLUTION—Industrial Hygiene Foundation, 4400 Fifth Ave., Pittsburgh 13, Pa.

POWER CRANES-SHOVELS-DRAGLINES—Attachments, Traction, Operation. Technical Bulletin No. 4, Power Crane & Shovel Association, 74 Trinity Place, New York 6, N. Y. $1.00.

WELLMAN *Williams Type*

FAST BUCKET OPENING SPEEDS OPERATIONS



● Double-hinge construction on Wellman's multiple-rope bucket permits faster opening than a single hinge. This speeds up operations, also gives a bigger spread in the open bucket for the same headroom.

Wellman's welded-design buckets offer you better performance and longer service. In all types and sizes you'll do better with Wellman!

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Engineers—Fabricators
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Models 24'—28' 35' Price $2100. to $3500. Birch finish, drafting table, 2 built-in desks with letter files & drawers, other conveniences. Can offer three years' finance plan. Write for pictures and plans.

TRAILER VILLAGE SALES, INC.
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Phones: Essex 2233

ROOSEVELT HOTEL STANDS ALONE AMIDST WRECKAGE. Although located in the heart of the tornado's path, The Roosevelt Hotel stands unyieldingly in a block that was *more than 50% destroyed* by the rampaging winds. Engineers reported "no structural damage" to this 12-story reinforced concrete frame building.

REINFORCED CONCRETE FRAMED STRUCTURES WITHSTAND WACO TWISTER

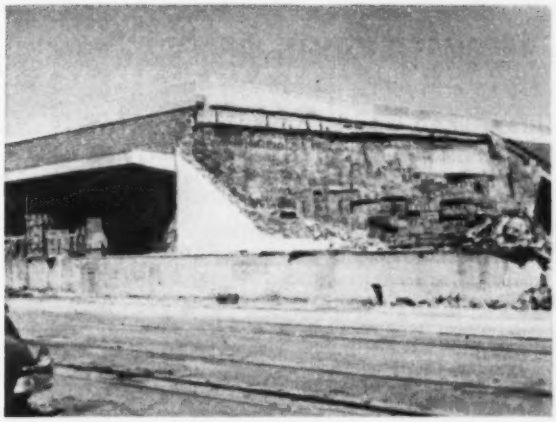
ON the afternoon of May 11, a tornado struck Waco, Texas, with devastating effect. 115 Lives were lost, property damage ran into several million dollars, and some blocks in the downtown area in the twister's heart were *over 80% destroyed!*

The tornado's fury was concentrated in an area of a few blocks. Many of the buildings in this area were completely demolished. Among them were the 5-story building of R. T. Dennis Co., the Joy Theatre, Neely Paint Co., Pollock Paper Corporation, and many smaller structures. Heavy brick parapet walls along the street side blew off and crashed into the street. Occupants were trapped in the cave-in. Cars in the street were crushed by falling brick!

But despite this general pattern of destruction, investigating engineers found that reinforced concrete framed structures suffered only superficial damage! While adjacent brick buildings were demolished, all reinforced concrete framed structures remained substantially intact—standing alone amidst the surrounding destruction.

DEBRIS IS ALL THAT REMAINS OF 5-STORY R. T. DENNIS BUILDING. This and four other buildings in the immediate area were obliterated by the storm. The buildings in the rear both have a reinforced concrete frame.

FRONT VIEW OF BUILDINGS IN 400 BLOCK ON FRANKLIN STREET shows the terrible toll the tornado took of buildings whose frame construction was less rigid than reinforced concrete. This is typical of the fate of the load-bearing wall-type of structures in the twister's path!



DRAMATIC ILLUSTRATION OF THE ABILITY OF REINFORCED CONCRETE TO WITHSTAND THE TWISTER is the Waples Platter Co. building. At right is all that remains of the brick portion of warehouse, but reinforced concrete section, left, is structurally unaffected by the storm.

Texas tornado traces path of ruin... reinforced concrete structures still stand!

What an attempt to "economize" with structural frames less rigid than reinforced concrete meant in loss of life and property in Waco is obvious from photographs of the tragedy. In the large, these buildings were leveled!

In contrast, here is the engineering report on reinforced concrete framed buildings in the storm's center: Roosevelt Hotel—12-story r/c frame bldg., no structural damage; Behrens Drug Co.—4-story r/c frame bldg., no structural damage; Southwestern Drug Corp.—4-story r/c frame bldg., no structural damage; Professional Bldg.—10-story r/c frame bldg., no structural damage; Frank Latham Co.—r/c frame bldg., no structural damage; Southwest Coffee and Spice, Ltd.—2-story r/c section, no structural damage; Youngblood's General Office Bldg.—no structural damage to r/c section; Waples Platter Co.—1-story bldg., no structural damage to r/c section; City Hall—r/c bldg., no structural damage; Allen Miller—partially r/c bldg., no damage to r/c columns and beams.

If *all* of the downtown Waco buildings had been of reinforced concrete . . . how changed the picture would have been!

CONCRETE REINFORCING STEEL INSTITUTE
38 South Dearborn Street
Chicago 3, Illinois

THESE REINFORCED CONCRETE BUILDINGS SUFFERED NO STRUCTURAL DAMAGE Behrens Drug Co. Bldg., Southwest Coffee & Spice Bldg., and Professional Bldg. (left to right) successfully rode out the storm!

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

Mass., Reading—B.A. 12/14—Town, Bd. P. Wks., Municipal Bldg., sewage pumping station, furnish, install sewage pumping equip., comminutor, etc. Part of $215,000 project. Plans deposit $10 each, refundable. Whitman & Howard, 89 Broad St., Boston, engrs. CD 3/27/53.

† **Me., Limestone**—SQUADRON OPERATIONS BLDG.—B.A. On Or About 1/4—U.S. Eng., 857 Commonwealth Ave., Boston 15, Mass., 2 story, wood framed 9,060 sq. ft. squadron operations bldg., 1 story, concrete block, 1,000 sq. ft. paint, dope and oil storage bldg., Limestone Air Force Base, Eng. 19-016-54-48. Under $500,000. $25. CD 9/19/51.

BIDS ASKED—BUILDINGS

▲ **Mass., Lynn**—HOSPITAL—B.A. 12/14—Lynn Hospital, 212 Boston St., 4 story, bsmnt., masonry hospital addn., Boston St. $1,000,000. Markus & Nocka, 251 Columbus Ave., Boston, engrs.-archts.

▲ **Conn., Middletown**—SCHOOL—B.A. 12/18—Town, Howard B. Matthews, chn. Special Bldg. Comn., Hunting Hill Ave., Woodrow Wilson High School, Hunting Hill Ave. $1,200,000. Plans deposit $50. Extended date. Guy F. Lamb, 252 Main St., archt. CD 11/20.

N. H., Hillsborough—ARMORY—B.A. 12/23—State, Adjutant General's Office, State House, Concord, one unit armory, State Military Reservation, DA 27-012-54-3. $60,000. Plans deposit $50, refundable.

N. H., Littleton—ARMORY—B.A. 12/23—State, Adjutant General's Office, State House, Concord, 1 unit armory, State Military Reservation, DA 27-012-54-4. $60,000. Plans deposit $50, refundable.

N. H., Peterboro—ARMORY—B.A. 12/23—State, Adjutant General's Office, State House, Concord, one unit armory State Military Reservation, DA 27-012-54-1. $60,000. Plans deposit $50, refundable.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MASSACHUSETTS—Commonwealth of Massachusetts, Dpt. P. Wks., 100 Nashua St., Boston,

DePinto Excavating Co., 118 Needham St., Newton Highlands, Mass. LB **$63,000**, est. $63,000. sect. state hy. South Main St., Andover. Bids Nov. 24. CD 11/12.

Town, Bd. P. Wks., Town Hall, Andover, Mass. rejected bids Nov. 17. Contr. 1, sewage treating plant, Contr. 2, sewers Ballardvale Sect., Contr. 3, sanitary sewers, ANDOVER, MASS. Will re-advertise. CD 11/9.

▲ **Morrison-Knudsen Co., Inc., Peter Kiewit Sons Co., C. J. Maney Co., Inc.**, 122 E. 42 St., New York, N. Y. CA **$11,917,808**, est. $12,000,000. Contr. 193, city water tunnel exten. Newton to Malden from Chestnut Hill Shaft No. 7 to Shaft No. 9A, Newton, BOSTON, MASS. Commonwealth of Mass., Metropolitan Dist. Comn., Constr. Div., 20 Somerset St., Boston, Mass. CD 11/24, under LB.

† **A. Cefalo & Sons, Inc.**, 42 Bennett St., Lynn, Mass. LB **$331,000**, est $325,000. rehabilitation and addns. to structures U. S. Naval Auxiliary Landing Field, NOY 77756, Spec. 36693, South Weymouth, WEYMOUTH, MASS. First Naval Dist., 495 Summer St., Boston, Mass. Bids Nov. 17 CD 10/19.

Ralph Civitarese Constr. Co., 319 Providence St., Hyde Park, Mass., LB, **$131,965**. Contract 8, lateral sewers, appurtenances, Broadway District, MILFORD, CONN. Town, Town Court, Milford, Conn. Bids Nov. 23. CD 11/17.

BUILDINGS

LOW BIDS AND CONTRACTS

Park Constr. Co., Inc., 40 Court St., Boston, Mass. LB **$498,000**. HOSPITAL addn., Main and Columbian Sts., South Weymouth, WEYMOUTH, MASS. South Shore Hospital Bd. Trustees, Mr. Ervin A. Hinds, 90 Columbian St., Weymouth, Mass. Bids Nov. 24. CD 11/5.

F. W. Brown Co., 25 Chestnut St., Norwich, Conn., CA, **$128,000**. DRYING ROOM, NEW LONDON, CONN. New London Mills Co., 38 Pequot Ave., New London, Conn. Chandler & Palmer, 114 Thayer Bldg., Norwich, Conn., archts.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

Pa., Souderton—SWIMMING POOL, etc.—B.A. 12/14—Souderton Boro Council, Souderton, swimming pool and bathhouse. $60,000.

† **Del., Dover**—AIRFIELD MARKERS, etc.—B.A. 12/16—U. S. Eng., 121 N. Broad St., Phila., Pa., airfield markers, buildings, roads, etc. Dover Air Force Base, ENG-36-109-54-86. $500,000. Extended date. Sears & Kopf, 13 E. 37 St., New York, N. Y., engrs. CD 11/6.

D. C., Wash.—B.A. 12/17—D. C. Govt., Director Sanitary Eng., 499 Pa. Ave. N.W., Section No. 3, of E. Branch Piney Branch Trunk Sewer, Kansas Ave. N.W. from Randolph to Varnum Sts. Plans deposit $50.

N. J., Lakewood—SWIMMING POOL, etc.—Bids Asked—Fairmont Lodge, Inc., 319 5 St., swimming pool and lodge bldg. addns., alterations, $150,000. Sydney Schleman, 135 E. 34 St., New York, N. Y., archt.

BIDS ASKED—BUILDINGS

▲ **Pa., Phila.**—MFG. and OFFICE—B.A. 12/15—At office George M. Ewing, archt, Western Saving Fund Bldg., (selected list bidders), manufacturing and office bldg. for American Meter Co., 1513 Race St. $1,000,000. CD 4/23.

▲ **Del., Wilmington**—HOSPITAL—B.A. 12/17—Homeopathic Hospital Assoc. of Delaware, Inc., c/o Walter Carlson, archt., 1014 Delaware Ave., Pelleport Convalescent Hospital. $1,000,000.

▲† **Pa., Phila.**—TURBINE LABORATORY—B.A. 12/21—Dpt. Navy, Phila. Naval Base, Phila., Boiler and Turbine Laboratory Bldg. No. 633 addn. and Bldg. 520 alterations, Naval Base, NOY 74547, Spec. 35504. $1,431,000. Borie & Smith, 1531 Locust St., archts. Harris-Dechant Assocs., 123 S. Broad St., engrs.

▲ **N. J., Trenton**—DORMITORY—B.A. 12/22—New Jersey State Bd. Educ., State House, women's dormitory, State Teachers College. $1,000,000. P. C. Van Nuys & Sons, 1 W. Main St., Somerville, archts. CD 8/4.

▲† **N. J., Dover**—GENERATING FACILITIES—B.A. 1/5—U. S. Eng., 80 Lafayette St., New York 13, N. Y. steam and power generating facilities at Picatinny Arsenal, Serial No. ENG-30-075-54-9, $3,500,000. Plans deposit $50. Burns & Roe, Inc., 233 Broadway, New York 6, N. Y., engr. CD 1/14.

SOON LETS CONTRACT—BUILDINGS

▲ **Pa., Phila.**—STORE—W. T. Grant Co., 130 W. 42 St., New York, N. Y., soon lets contract department store. $1,000,000. Thalheimer & Weitz, 1315 Walnut St., archts. CD 8/4.

N. J., Ellisburg—CLUB, etc.—Bids Asked—Woodcrest Country Club, c/o Dr. Benjamin Gross, 415 Cooper St., Camden, club alterations and swimming pool. $100,000. Louis H. Goettelman, 438 Loucroft Rd., Haddonfield, archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Kelly Paving Co., 1347 E. High St., Phila., Pa. LB **$189,932**. water mains, various locations, Bid No. 2065;

Herbert J. Elkins, 69 St. and Kingsessing Ave., Phila., Pa. LB **$74,325**, Bid No. 2066, elevated 50,000 gal. elevated tank, PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Samuel S. Baxter, c/o owner, water comr. CD 8/9/46.

John Meehan & Son, 916 W. Dakota St., Phila., Pa., LB **$149,555**. sewers various locations, Bid No. 2068, PHILA. PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Samuel S. Baxter, c/o owner, water comr. CD 3/11/46.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Starrett Bros. & Eken, Inc.**, 63 Wall St., New York 5, N. Y. CA Est. **$23,000,000**. 12 story OFFICE, 23 and 24 Sts., Madison and 4 Aves., NEW YORK, N. Y. Metropolitan Life Insurance Co., 1 Madison Ave., New York 10, N. Y. CD 5/28/52.

Green Construction Co., 274 Madison Ave., New York, N. Y. LB, **$867,180**, Junior-Senior High SCHOOL, Route 32 WOODBURY, N. Y. Bd. Educ., Central School Dist. 1, Towns of Monroe, Woodbury, Blooming Grove, Chester & Tuxedo, School Bldg., Monroe, N. Y. Bids Nov. 19. CD 10/29.

Pennsauken Twp. Bd. Educ., Pennsauken. N. J., rejected bids Oct. 8, elementary SCHOOL, Irving and Cooper Aves., PENNSAUKEN, N. J. Will re-advertise. CD 9/2.

Belli Co., 2127 Hamilton Ave., Trenton, N. J. LB, **$367,000** fireproofing and reconstr. State HOSPITAL, TRENTON, N. J. State Div. Purchase & Property, State House, Trenton, N. J. Bids Nov. 17. CD 11/5.

▲ **E. Roger Jones**, N. Delsea Dr., Vineland, N. J., CA, **$2,000,000**, RESIDENTIAL DEVELOPMENT, Mahoney Rd., PENNSVILLE, N. J. Delaware Valley Corp., c/o Howard Realty Co., Landis Ave., Vineland, N. J. Edward G. Scheldt, 610 Landis Ave., Vineland, N. J., archt.

John M. Zerbey, Bristleton and Englewood Aves., Phila., Pa. Separate Contracts. **$305,000**. RESIDENTIAL DEVELOPMENT, Jenkintown Rd., ABINGTON, PA.

Paul Margolies, Green and Johnson Sts., Phila., Pa. Separate Contracts. **$800,000**. RESIDENTIAL DEVELOPMENT, Whitemarsh Twp., BARREN HILL, PA.

Mary-Mar, Inc., c/o William G. Benham, Lansdowne, Pa. Separate Contracts, **$310,000**. RESIDENTIAL DEVELOPMENT, Conestoga Rd., BERWYN, PA.

Levitt & Sons, Levittown, Pa., CA **$500,000**. elementary SCHOOL, Bristol Twp., BRISTOL, PA. Levittown Educational Foundation & School Auth. of Bristol Twp., Bristol, Pa. CD 4/6.

▲ **John & Peter Pickard**, 505 Lancaster Ave., Haverford, Pa. Separate Contracts, **$1,000,000**. RESIDENTIAL DEVELOPMENT, Fairfield Rd., etc., DEVON, PA.

▲ **Madway Eng. & Constr. Co.**, 107 N. Aberdeen Ave., Wayne, Pa. Separate Contracts, **$6,480,000**. RESIDENTIAL DEVELOPMENT, Fairview Rd., FOLSOM, PA.

▲ **John McShain, Inc.**, 17th and Spring Garden Sts., Phila., Pa., CA **$5,926,700**, general constr.;

Riggs-Distler & Co., 1518 Walnut St., Phila., Pa. CA $1,083,500, air-conditioning;

Herre Bros., Sixth and Montrose Sts., Harrisburg, Pa. CA **$980,547**, electrical work for 18 story OFFICE at 7th and Forster Sts. for State Dpt. Labor & Industry, HARRISBURG, PA. General State Auth., 18 and Herr Sts., Harrisburgh, Pa. Grand total $7,990,747. Bids Nov. 5, awarded Nov. 25. CD 11/10.

Conway & Ryan, 2313 Fairmount Ave., Phila., Pa., LB **$363,838**. two elementary SCHOOLS addn., HORSHAM and PROSPECTVILLE, PA. Hatboro-Horsham Joint Auth., Horsham, Pa. CD 3/12.

▲ **Ertel Constr. Co.**, 5 and Market Sts., Camden, N. J. CA. **$1,250,000**. HOSPITAL addn., NORRISTOWN, PA. Sacred Heart Hospital, Freedley St., Norristown, Pa. Bids Nov. 3. CD 10/29.

▲ **Heywood Hall Constr. Co.**, 512 Swede St., Norristown, Pa. Separate Contracts, **$2,500,000**. RESIDENTIAL DEVELOPMENT, Vine and Johnson Sts., NORRISTOWN, PA. H. B. Barrett Pennell, 33 E. Wynnewood Rd., Wynnewood, Pa., archt.

R. M. Shoemaker Co., 1619 Sansom St., Phila., Pa., CA **$120,000**. 1 story brick, cinder block, steel BUILDING addn., PHILA., PA. Whitehead Metal Products Co., 1955 West Hunting Park Ave., Phila., Pa. C. Jones Buehler, Crozer Bldg., Phila., Pa., archt. Bids Aug. 14. CD 8/1.

Northwood Exclusive Homes, Inc., 1014 Wakeling St., Phila., Pa. Separate Contracts. **$300,500**. RESIDENTIAL DEVELOPMENT, "B" St., etc., PHILA., PA.

George K. Heebner, Inc., 1231 Vine St., Phila., Pa. CA **$125,000**. FOOD DISTR. BLDG., PHILA., PA. L. H. Parke Co., 1132 N. Front St., Phila., Pa. C. Jones Buehler, 1422 Chestnut St., Phila., Pa., archt.

Mariani Constr. Co., Farnsworth St. and Solly Ave., Phila., Pa. Separate Contracts. **$305,000**. RESIDENTIAL DEVELOPMENT, Farnsworth St., etc., PHILA., PA. Henry S. Berg, 1411 Walnut St., Phila., Pa., archt.

(Continued on page 112)

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects inviived except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

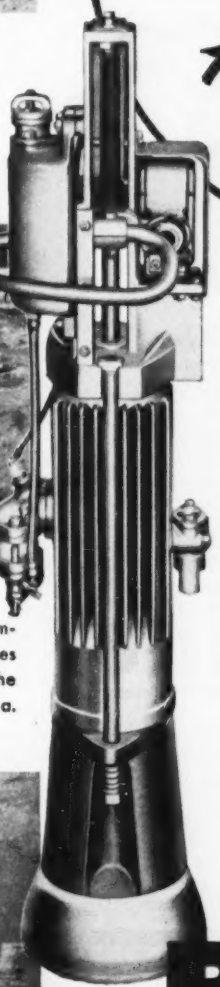
FOR SOIL COMPACTION IN RESTRICTED AREAS!

BARCO *is the Answer!*

CALIFORNIA HOSPITAL—Ability to work inside buildings and in other restricted areas makes the Barco Rammer invaluable. The job pictured above is on the Peninsula Hospital near Millbrae, California. *Contractors:* Williams & Burrows and Carl N. Swenson Company. (*Photo:* CONSTRUCTION ILLUSTRATED.)

GEORGIA HOUSING PROJECT—With Barco Rammers, you can finish fill to high degree compaction immediately for quicker completions and important savings in cost. This is why the J. A. Jones Construction Co. used seven Barco Rammers on the Lakewood Housing Project at Atlanta, Georgia. (*Photo:* DIXIE CONTRACTOR.)

NEW YORK DAM—Exacting specifications for soil compaction on the Downesville Dam project of the New York City Board of Water Supply were easily met by Barco Rammers used by Carlo Bianchi & Company. (*Photo:* CONSTRUCTIONEER.)



SOIL COMPACTION is the key to *better construction* on important building projects throughout the country—and on these jobs, BARCO IS THE ANSWER! Time after time, it has been proven that no other type of equipment can match BARCO PERFORMANCE.

The Barco Rammer is a completely self-contained unit; no auxiliary or extra equipment is required. On area tamping, where specifications call for 95% to 97.5% (modified Proctor) compaction, one man can average 20 to 30 cubic yards of fill per hour, day after day.

If you are not already using the Barco Rammer for soil compaction work, find out about it now! *Worldwide Sales and Service.* BARCO MANUFACTURING COMPANY, 514N Hough St., Barrington, Illinois. (*Near Chicago*).

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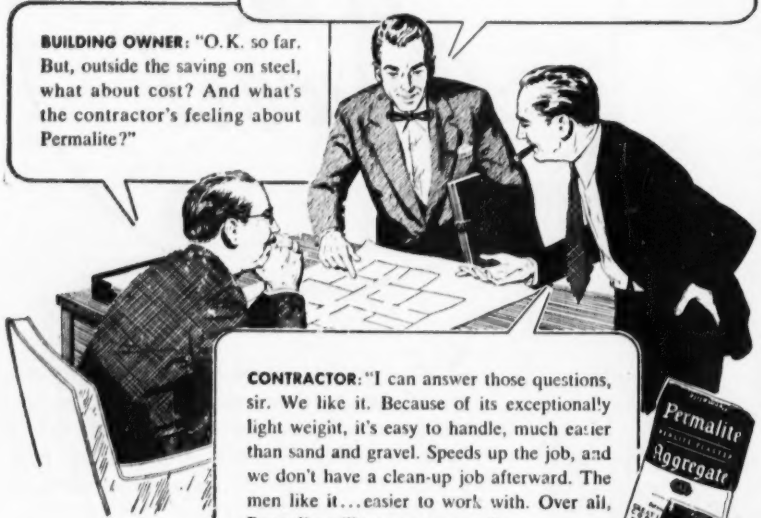
ARCHITECT: "As I explained to you earlier, sir, we've been able to reduce the structural steel requirements on your building by figuring to use Permalite for both concrete and plaster. With Permalite as the aggregate, we'll have a concrete with only one-third to one-half the weight of regular concrete—and with ample strength. Our curtain walls can be lighter and thinner, with improved insulating values. And here, on the columns and ceilings, Permalite/plaster will give us tremendous savings in both dead load and expense... and meet all code requirements by giving us up to 4-hour fire-ratings, too."

BUILDING OWNER: "O.K. so far. But, outside the saving on steel, what about cost? And what's the contractor's feeling about Permalite?"



CONTRACTOR: "I can answer those questions, sir. We like it. Because of its exceptionally light weight, it's easy to handle, much easier than sand and gravel. Speeds up the job, and we don't have a clean-up job afterward. The men like it... easier to work with. Over all, Permalite will save you money."

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(Continued from page 110)

Meitner Co., 5546 Ridge Ave., Phila., Pa. Separate Contracts. $300,000. RESIDENTIAL DEVELOPMENT, Livezey St., PHILA., PA.

Solomon Bronstein, Lancaster Ave. and St. Davids Rd., St. Davids, Pa. Separate Contracts. $600,000. RESIDENTIAL DEVELOPMENT, Roosevelt Blvd., PHILA., PA. Lewis J. Cowan, 1505 Pine St., Phila., Pa., archt.

Cutler Homes, Inc., 1615 Chelten Ave., Phila., Separate Contracts. $500,000. RESIDENTIAL DEVELOPMENT, Fairfield St., etc., PHILA., PA. Sherman Rochlis, 5664 Diamond St., Phila., Pa., archt.

Boardman-Smith Corp., 1322 Airdrie St., Phila., Pa. Separate Contracts. $308,000. RESIDENTIAL DEVELOPMENT, 8th St., PHILA., PA. G. Harold Murphy, 1621 Sellers St., Phila., Pa., archt.

Abington Twp. School Dist., Abington, Pa. rejected bids Nov. 3, Hamilton Ave. Elementary SCHOOL, ROSLYN, PA. $440,000. Will re-advertise. CD 10/29.

Frank J. Scannel, Suburban Square, Ardmore, Pa. Separate Contracts. $310,000. RESIDENTIAL DEVELOPMENT, Overhill Rd., etc., WESTTOWN, PA.

John Maccioccia & Sons, Inc., 222 N. 65 St., Phila., Pa. Separate Contracts. $980,000. RESIDENTIAL DEVELOPMENT, Grandview Acres, WESTTOWN, PA.

▲ **Baltimore Contractors, Inc.**, 711 S. Central Ave., Baltimore, Md. LB $2,258,000. 165x235 ft., brick DORMITORIES, 2 men's units, 1 women's unit, COLLEGE PARK, MD. University of Maryland, College, Park, Md. CD 8/20.

▲ **Harry Drucker**, 285 Central Ave., Lawrence, N. Y., Separate Contracts, $1,000,000, Elkhart Garden APARTMENTS, NEWARK, DEL. Erwin Gerber, 1180 Raymond Blvd., Newark, N. J., archt.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

La., Coushatta—B.A. 12/16—Red River-Bayou Pierre Levee & Drainage Dist., channel excav. and dam.

† **Miss., Meridian**—TRAINING FACILITIES—B.A. 12/22—P. Wks. Officer, Naval Base, S. C., alterations to provide training facilities in Bldgs. 3505 and 2508 at Marine Corps Reserve Training Center, Key Field, NOY 81180. Plans deposit $10.

▲† **Fla., Homestead**—BUILDINGS, etc.—B.A. 12/23—U. S. Eng., P. O. Box 4970, Jacksonville, renovate 50 buildings, utilities, railroad spur, Homestead Air Force Base, $1,300,000. CD 3/9.

BIDS ASKED—BUILDINGS

▲ **Ga., Atlanta**—HOSPITAL—B.A. 2/4—Fulton-DeKalb Hospital Auth. 36 Butler St. S.E., hospital, $23,000,000. Plans deposit $350. Robert & Co. Assocs., 96 Poplar St. N.W., archts. CD 5/6.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Southeastern Electric Constr. Co., Andulusia, Ala., CA, $397,525, Contract 7, distr. sys. in Ozark, Newton, Prichard and Midland City;

Bumby & Stimpson, Inc., Orlando, Fla., CA, $446,944 Contract 10, distr. sys., for Troy and Brundidge, ALABAMA. Southeast Alabama Gas District, City Hall, Troy, Ala. Bids Nov. 18. CD 11/12.

▲ **Engineering Constr. Co.**, 402 N. Cheyenne St., Tulsa, Okla., CA, $3,326,505, Contract 2, Southeast Transmission Lateral approx. 150 mi. 2- to 10-in. lines;

McDonough Constr. Co., 7 Baltimore Pl., Atlanta, Ga., CA, $1,146,905, Contract 8, distr. sys. in Dothan;

Modern Welding Co., Owensboro, Ky., CA, $704,599, Contract 9, distr. sys. in Headland, Abbeville, Newville, Eufaula and Seale, ALABAMA. Southeast Alabama Gas District, City Hall, Dothan, Ala. Grand Total $5,178,009. Bids Nov. 20. CD 11/12.

MISSISSIPPI—State Hy. Dpt., T. C. Robbins, dir., Jackson,

Clark Bros. Co., P. O. Box 1949, Jackson, Miss. CA $252,699. est. $270,000. bit. and c. conc. 1.113 mi. U. S. Hy. No. 90 through Pascagoula, Proj. FI 003-1 (3), Jackson Co. Bids Nov. 24. CD 11/13.

MISSISSIPPI—State Hy. Dpt., T. C. Robbins, dir., Jackson, returned unopened one bid received Nov. 24, grading, drainage, culverts, bridges 13.569 mi. Miss. Hy. No. 27 between Tylertown and Monticello, Proj. S 0184 (2) A, Lawrence Co. $325,000. CD 11/13.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Graham Bros.**, Southern States Bldg., Richmond, Va., CA $1,156,000. LIBRARY, BLACKSBURG, VA. Virginia Polytechnic Institute, Blacksburg, Va. Bids Nov. 18. CD 11/27, under LB.

▲ **McKoy-Helgerson Co.**, P.O. Box 57, Greenville, S. C. CA $1,312,000. two WARD BLDGS. for disturbed patients at State Hospital, COLUMBIA, S. C. South Carolina Mental Health Comn., State Capitol, Columbia, S. C. Bids Nov. 12. CD 10/26.

▲ **The Jordan Co.**, Andrews Rd., Columbus, Ga., LB, $3,582,000. HOSPITAL, SAVANNAH, GA. Chatham Co. Hospital Auth., Court House, Savannah, Ga. Bids Nov. 24. CD 10/23.

M. T. Reed Constr. Co., P. O. Box 1066, Jackson, Miss. LB $661,333. PLANT for American Bosch Co., COLUMBUS, MISS. City, Columbus, Miss. Bids Dec. 3. CD 11/25.

▲† **Robert E. McKee, Inc.**, 1918 Texas St., El Paso, Tex. LB sub base bid $6,693,500, Total bid $7,649,120. 9 story, concrete 500-bed HOSPITAL, FORT KNOX, KY. U. S. Eng., 830 W. Broadway, Louisville 3, Ky. Bids Nov. 24. CD 11/9.

(Continued on page 115)

On The New York Thruway

10 MULTIFOOTE PAVERS

HERE'S another MultiFoote Road! There are 10 MultiFoote Pavers on the New York Thruway! That's a *number* to remember—and when you look over the names of the contractors that own them it is a number to think about when you are planning for equipment on your own paving work.

The simplicity of design, the easy accessibility and the speed of the MultiFoote have been responsible for more than one paving record.

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2 MultiFoote Pavers

Savin Const. Corp., Hartford, Conn.
2 MultiFoote Pavers

Mayersohn Const. Co., Verona, N. Y.
1 MultiFoote Paver

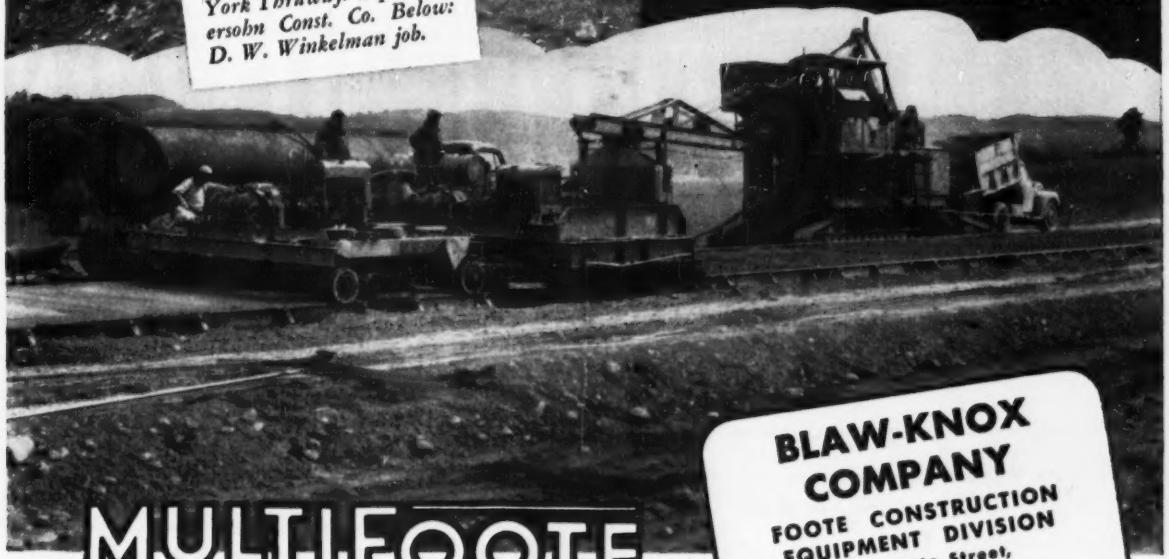
DeWitt Corporation, Pavilion, N. Y.
1 MultiFoote Paver

McLain Const. Co., Kenmore, N. Y.
1 MultiFoote Paver

Baugham Company, Port Byron, N. Y.
1 MultiFoote Paver

DeLillo Const. Co., Horseheads, N. Y.
1 MultiFoote Paver

D. W. Winkelman & Co., Syracuse, N. Y.
1 MultiFoote Paver



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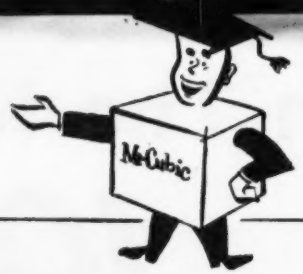

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(Continued from page 112)

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Ind., Lafayette**—B.A. 1/19—Bd. P. Wks., E. McQueen, clk., City Hall, sewage treatment plant and sewage sys. Incl. Div. A-1, West and East Interceptors; Div. A-2, South 3 St., 11 and 14 Sts. interceptors; Div. A-3, W. Sycamore St. and Shamrock Park interceptors; Div. A-4, West Interceptor, force main; Div. B-1, three lift stations; Div. B-2, sewage treatment plant. $2,000,000. D. McClurg, City Hall, city engr. Boyd Phelps, Inc., 1000 Washington St., Michigan City, Ind. consult engr. CD 3/5/52.

BIDS ASKED—BUILDINGS

Mich., Wyandotte—SCHOOL—B.A. 12/17—City, Bd. Educ,. C. C. Readhead, secy., brick Abraham Lincoln Junior High School. Plans deposit $25 refundable, Swanson Assoc., West Long Lake Rd., Bloomfield Hills, archts. CD 7/16.

O., Toledo—SCHOOL—B.A. 12/18—Bd. Educ., Wm. E. Hallauer, asst. supt., Southard Ave., 134x208 ft., bsmt., Libbey High School addn., 1250 Western Ave. $510,000. Plans deposit $15, Peterson, Hoffman & Grow, Spitzer Bldg., engrs.-archts. CD 12/11.

Mich., Dowagiac—CHURCH—Bids Asked—St. Johns Evangelical Lutheran Parish, Dowagiac, 1 story, bsmt., brick, stone church, $325,000, Alfred C. Emmerling, 112 Madison St., Detroit, Zone 26, archt. CD 10/22/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Roy Ryan Sons, Inc.,** 800 E. Michigan St., Evansville, Ind., CA, **$1,341,050,** WW imprvs., settling basin addn. and equipment, water mains, EVANSVILLE, IND. Bd. P. Wks., City Hall, Evansville, Ind. Awarded Nov. 19. CD 7/8/52.

▲ **H. D. Tousley Co. Inc.,** 925 E. St. Clair St., Indianapolis, Ind., CA, **$2,034,000,** est. $1,900,000, modernize city sanitation plant, installing sedimentation units, air blowers, remodeling piping in activated sewage plant, INDIANAPOLIS, IND. Bd. Sanitary Comrs., 421 N. Pennsylvania St., Indianapolis, Ind. Bids Nov. 23, awarded Nov. 24. CD 11/5.

▲ **Normeyle & Berg,** 2223 11 St., Rock Island, Ill., CA, **$1,224,300,** water treatment plant and elevated water tank, BLOOMINGTON, ILL. City, City Hall, Bloomington, Ill. Awarded Nov. 23. CD 1/21/52.

▲ **Arcole Midwest Corp.,** 3225 Main St., Evanston, Ill., LB, **$436,172,** bridge Cicero Ave. over Congress Expressway; LB, **$443,172,** bridge at Laramie Ave. over Congress Expressway;

Superior Concrete & Constr. Co., 5113 Woodlawn Ave., Chicago, Ill., LB, **$582,651,** bridge at Kostner Ave. Congress Expressway;

M. J. Boyle & Co., 2480 Elston Ave., Chicago, Ill., LB **$728,732,** bridge over Congress Expressway at Kedzie Ave., CHICAGO, ILL. Cook Co., County Bldg., Chicago, Ill. Bids Nov. 13, CD 11/18.

▲ **Leininger Constr. Co.,** 30 N. LaSalle St., Chicago 2, Ill. LB, **$1,150,329,** paving from Mainheim Rd. to Addison Creek, Congress Expressway, Bellwood, CHICAGO, ILL. Cook Co., County Bldg., Chicago, Ill. Bids Nov. 13. CD 11/18.

WISCONSIN—State Hy. Comm., Madison,

H. H. Mass Constr. Co., Algonquin, Ill., CA, **$564,648** hy. structures, Proj. T 04-3 (1), Contract 1, Columbia and Sauk Counties. Bids Nov. 24. CD 11/6.

WISCONSIN—State Hy. Comm., Madison,

Phillip C. Kaiser, 311 Highland Ave., Portage, Wis., CA, **$152,909,** 5.387 mi. Proj. S-0249 (2), Contract 1, Dane Co. CD 10/29;

Ryan Brothers Co., South Third and Division Sts., Janesville, Wis., CA, **$116,050,** 1.605 mi. Proj. T 0208 (1) Contract 4, Richland Co. Bids Nov. 24, CD 11/6.

BUILDINGS

LOW BIDS AND CONTRACTS

Frank J. Kares, 17403 Harvard Ave., Cleveland 28.0, LB, **$411,074,** 2 story, bsmt., 33,000 sq. ft., brick Charles W. Chestnutt SCHOOL, CLEVELAND, O. Bd. Educ., 1380 E. 6 St., Cleveland 6, O. Bids Nov. 25. CD 11/5.

▲† **Blaw-Knox Co.,** 2042 Farmers Bank Bldg., Pittsburgh 30, Pa. CA **$1,159,061,** prefabricated piping for process bldg.;

R. C. Mahon Co., 6575 E. Eight Mile Rd., Detroit 34, Mich. CA **$1,101,010,** fabricate, furnish, deliver miscellaneous iron for process bldg.;

Noble Co., 1860-62 7 St., Oakland, Calif. CA **$298,000** supply electrical bridge cranes;

Bloomer Heating & Ventilating Co., 1237 W. 47 St., Chicago, Ill. CA **$152,325** fabricated tubing channels;

International Steel Co., 2044 Edgar St., Evansville, Ill. CA **$594,970,** misc. iron;

Richmond Engineering Co., Inc., 700 Hospital St., Richmond 5, Va. CA **$484,775,** coolant condensers;

Midwest Piping Co., Inc., Second and Barry Sts., St. Louis 4, Mo. CA **$827,034,** prefabricated piping;

Grinnell Co., Inc., 200 W. Exchange St., Providence 1, R. I. CA **$401,071,** prefabricated piping;

Mayer Brothers, Altoona, Pa. CA **$785,430,** exterior building services;

Chism & Miller, Inc., S By Pass 66, Springfield, Ill., CA **$547,342,** plant control facility;

Johnson Service Co., 1355 Washington Blvd., Chicago 7, Ill. CA **$563,900,** temperature control and smoke detection sys. for Gaseous Diffusion PLANT (Subcontractors under Peter Kiewit Sons Co., P. O. Box 268, Portsmouth, O.) for Atomic Energy Comn., 1901 Constitution Ave. N. W., Wash., D. C., PIKETON AND WAKEFIELD, O. Grand totals $6,915,818. CD 8/13/52, under CA.

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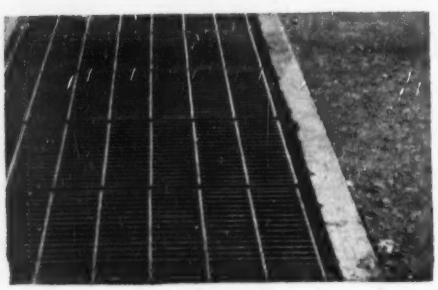

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Wedge-Slot Screens
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Ruch Constr. Co., 895 Spencer St., Toledo, O. CA **$469,474**, general contract GYMNASIUM addn. to Scott High School, TOLEDO, O. Bd. Educ., Southard Ave., Toledo, O. Bids Nov. 20. CD 10/27.

▲ **Herlihy Mid Continent Corp.**, 135 S. LaSalle St., Chicago, Ill. LB. **$1,656,750.** Parking GARAGE, Wacker Dr. near State St., CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Nov. 23. CD 11/2.

▲ **S. N. Nielsen Co.**, 3059 Augusta Blvd., Chicago, Ill., CA, **$4,932,537**, three APARTMENTS and 22 ROW HOUSES, Blue Island and 15 Sts., CHICAGO, ILL. Chicago Housing Auth., 608 S. Dearborn St., Chicago, Ill. Bids Oct. 27, awarded Nov. 23. CD 11/9, under LB.

▲ **Nixon Madison Corp.**, 1515 N. State St., Chicago, Ill., Owner Builds, **$3,750,000**, 300 HOMES along 55 and Madison Sts. sourth of HINSDALE, ILL.

▲ **John Griffiths & Son Co.**, 228 N. LaSalle St., Chicago 1, Ill., CA, **$1,104,652**, West Deerpath Grade SCHOOL, LAKE FOREST, ILL. School District, 67, 400 E. Illinois St., Lake Forest, Ill. Bids Nov. 3, awarded Nov. 23. CD 11/20, under LB.

▲ **E. H. Herzog Constr. Co.**, 1032 Lee St., Des Plaines, Ill., Own Forces, **$3,200,000**, 160 HOMES in area of Rte. 58 and Wolf Rd., near MORTON GROVE, ILL.

▲ **W. A. Herzog Constr. Co.**, 1032 Lee St., Des Plaines, Ill., Own Forces, **$1,200,000**, 80 HOMES, in Maine Twp., near PARK RIDGE, ILL.

Spaulding Feed Co., 1909 Erskine St., Detroit 7, Mich. Owner Builds. **$107,640.** 1 story, brick, steel dry PLANT for grains, DETROIT, MICH.

Carson Pirie Scott & Co., Merchandise Mart, Chicago, Ill. Owner Builds. **$200,000.** 1 story, 100x350 ft., concrete WAREHOUSE, 12600 Southfield St., DETROIT, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Colo., Denver**—WIND BRACING—B.A. 12/15—U. S. Eng., 1709 Jackson St., Omaha, Neb., addnl. wind bracing for Academic Hangar, Lowry Air Force Base, Invv. 25-066-54-42. CD 8/17/51.

† **Mo., Grandview**—AFRTC APRON, etc.—B.A. 1/5—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., AFRTC apron, drainage, 3,571 lin. ft. 12- to 48-in. storm drains, etc., Grandview Air Force Base, ENG-54-34, near here. Burns & McDonnell Eng. Co., Box 7088, Kansas City, Mo., engr.

† **South Dakota**—B.A. 1/8—U. S. Eng., 1709 Jackson St., Omaha, Neb., trashrack rake, Fort Randall Reservoir Proj., near Pickstown, Inv. 25-066-54-100.

BIDS ASKED—BUILDINGS

Tex., Longview—CHILDRENS—B.A. 12/17—First Baptist Church, Longview, 2 story, part bsmnt. childrens bldg. H. E. Bovay, Jr., M. E. Esperson Bldg., and Walter P. Moore, 2 Pinedale St., Houston, engrs. Wilson, Morris & Crain, 227 E. Tyler St., archts. CD 11/18.

▲ **Mo., Independence**—POWER PLANT—B.A. 12/21—City, Robt. E. Everett, chn. council light comn., municipal power plant expansion addnl. 5,000 kw turbo-generator boiler, condenser, evaporator, etc. $1,500,000, Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs. CD 10/13.

▲ **Ia., Des Moines**—SCHOOL—B.A. 12/22—Bd. Educ., 629 3 St., Eastern High School addn. $1,400,000. Wetherell & Harrison, 506 Shops Bldg., archts. CD 11/29/51.

Tex., Dallas—SHOPPING CENTER—Bids Asked—George Mixon 11000 Preston Rd., Sect. 1, shopping center $348,000; Sect. 2, shopping center, $300,000. G. Mallory Collins, 2921 Fairmont St., archts. CD 11/6.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MISSOURI**—State Hy. Comn., Jefferson City,
Geo. Bennett Constr. Co., 3001 N. 7 Trafficway, Kansas City, Kan. LB **$1,056,159.** Intercity Freeway (Sixth St.) and southwest Bluff St., 2 service ramps, underpass, north service drive from May to Walnut Sts., Kansas City, Jackson Co. Bids Nov. 24. CD 11/6.

▲ **Guy H. James Constr. Co.**, First National Bldg., Oklahoma City, Okla. LB **$1,152,000**, est. $1,500,000. flood-proof intake station at water purification plant, KANSAS CITY, MO. City, c/o Melvin P. Hatcher, water dir., City Hall, Kansas City, Mo. Burns & McDonnell Eng. Co., 95 and Troost Sts., Box 7088, Kansas City, Mo., engr. James B. Ramsey, Water Dpt. engr. Bids Nov. 23. CD 11/7/52.

▲† **D. B. Hill**, 619 Parker St., Little Rock, Ark. and **S. E. Evans**, 2914 North "O" St., Fort Smith, Ark., CA, **$1,295,451**, grading, drainage, Little Rock Air Force Base, Lots 1 and 2, Inv. 54-11, LITTLE ROCK, ARK. U. S. Eng., 300 Broadway, Little Rock, Ark. CD 11/17, under LB.

▲ **TEXAS**—Texas Hy. Comn., Austin,
J. A. Raines, Contractor, P. O. Box 936, Muskogee, Okla., LB, **$1,449,137**, Old and Lost River Bridge and grading 0.943 mi. Hy. State 73. Proj. FI 1052 (12) Chambers Co. Bids Nov. 24. CD 10/30.

TEXAS—State Hy. Comn., Austin,
Norman L. Larson, 301 Littlefield Bldg., Austin, Tex., LB, **$287,769**, Big Brush Creek and Lavaca River Bridge and Approaches 1.76 mi. on Hy. St. 111, Lavaca Co.;

W. Paul Carlisle & T. R. Vaideman & Son, 6434 Orchid Lane, Dallas, Tex. LB, **$161,783**, Attoyac Bayou Bridges and approaches, 0.674 mi. Nacogdoches and San Augustine Counties. Bids Nov. 25. CD 10/30.

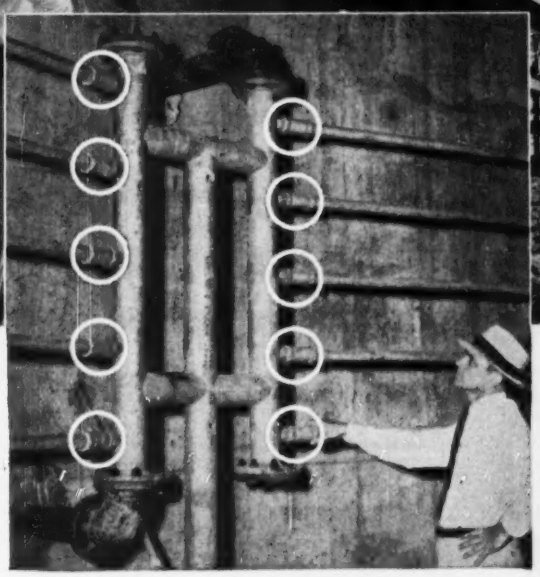
(Continued on page 119)

Canton sanitary engineers find the easiest way to solve difficult piping problems is also the most dependable . . . with Dresser Couplings

One of the construction problems at Canton, Ohio's Sewage Treatment Plant was installation of a special welded tee on the effluent line between grid house and primary tanks.

The use of 54" Style 38 Dresser Couplings made the installation relatively simple. Workmen, with a minimum of skill and heavy equipment, quickly made permanently tight Dresser joints.

Recognizing the many applications for versatile Dresser Couplings throughout the plant, Canton engineers greatly simplified tough, close-quarter piping installations.



Hot water heating coils completely encircle the interior walls of six large digester tanks in the Canton Plant. 450 Dresser Style 65 Compression Couplings were used to absorb expansion-contraction of piping and to simplify close-wall installation.

Write today for more information on how Dresser Couplings can save *you* time and money on water, sewage and industrial waste projects.

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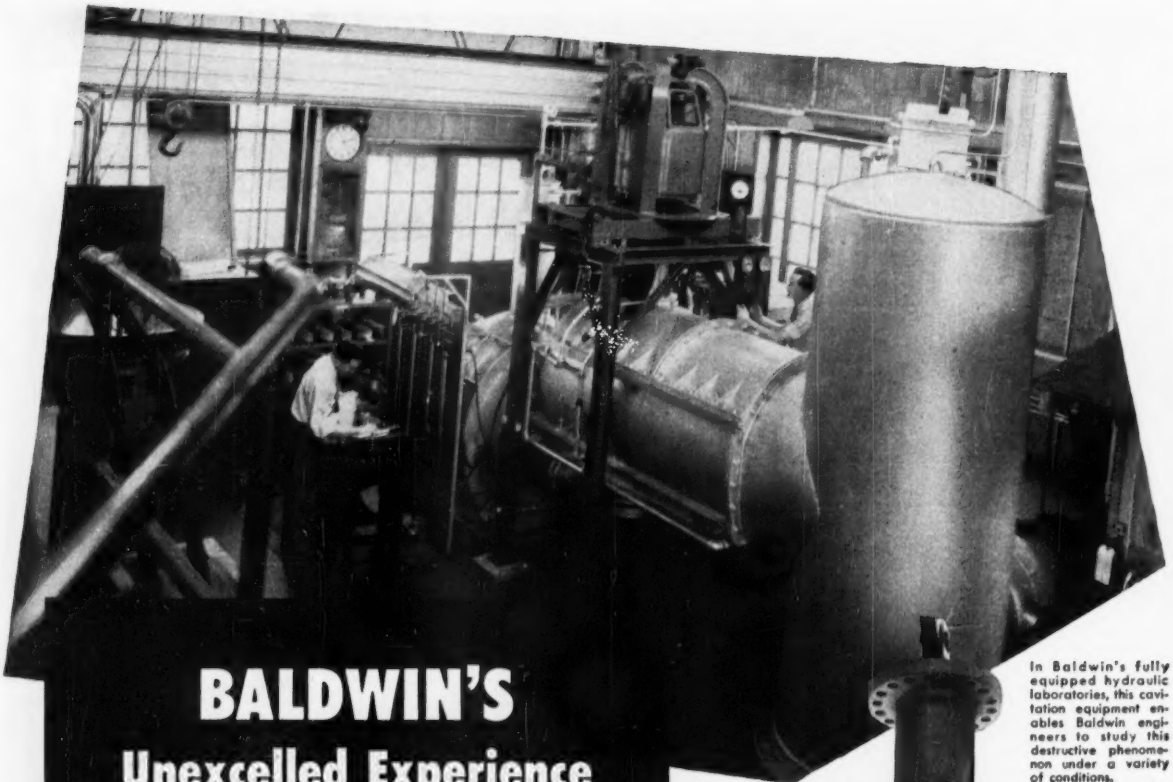
Dresser Manufacturing Division, 69 Fisher Ave., Bradford, Pa. (One of the Dresser Industries). Warehouses: 1121 Rothwell St., Houston, Texas; 101 S. Bayshore Highway, South San Francisco, California. Sales Offices: New York, Philadelphia, Chicago, Houston, South San Francisco. In Canada: Toronto, Ont.



BALDWIN'S
Unexcelled Experience and Research Pay Off Again With 94% Efficiency of Center Hill Turbines

In Baldwin's fully equipped hydraulic laboratories, this cavitation equipment enables Baldwin engineers to study this destructive phenomenon under a variety of conditions.

Here is the one-piece, 127,200 lb., 186⅛ in. runner for the Baldwin 62,500 hp Francis-type turbine at Center Hill and Wolf Creek Dams.

Baldwin's continuing research, combined with experience in designing and building all types of turbines from as early as 1825, is paying a big dividend to the Corps of Engineers at its Center Hill and Wolf Creek Dams.

Initial tests of one of three 62,500 hp vertical Francis-type turbines at Center Hill showed a maximum attained efficiency (at 105.9 rpm and 160 foot head) of 94% . . . one of the best efficiency records ever obtained for Francis-type units. Since the six Baldwin-built turbines for Wolf Creek are identical, the Corps of Engineers has the benefit of similar high efficiency for its two Cumberland River Valley hydro-electric plants which will generate about 1218 million kwhr each year.

Whatever your hydro-electric project, Baldwin engineers will be glad to put their vast experience and resources at your service to help you get top performance. Experienced with all four basic type of turbines . . . Francis, Kaplan, Pelton Impulse and Propeller . . . they can give you an unbiased opinion of the type best suited to your flow and head conditions.

For details about Baldwin research and some interesting turbine installations, please write for Bulletin 1000 to Department 5109, Baldwin-Lima-Hamilton Corporation, Philadelphia 42, Pa.

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(Continued from page 116)

▲ TEXAS—State Hy. Comn., Austin,
Cooper & Woodruff, 222 Mays Bldg., Amarillo, Tex., LB, $317,786 15.614 mi. Hy. US 60 and SH 117, Proj. F-421 (9), Carson and Hutchinson Counties, CD 11/5; LB $157,172, 8.76 mi. Hy. SN 70, Proj. S 1212 (8) Roberts Co.;
Bauer-Smith Dredging Co., Port Lavaca, Tex., LB, $167,603 washed shell at Austwell, Proj. B 16-A-3, Refugio and Arkansas Counties;
Bryan & Hoffman, P. O. Box 390, Plainview, Tex., LB, $96,458, 9.313 mi. Hy. FM 2003 Proj. S 1898 (1), Foard Co.;
Joe Davidson, P. O. Box 439, Terrell, Tex., LB, $77,153 3.521 mi. FM 1567, Proj. S 1522 (2), Hopkins Co.;
H. R. Henderson & Co., P. O. Box 313, Marshall, Tex., LB, $105,240 8.716 mi. Hy. FM 96, Proj. C 1572-1-2, Cass Co.;
John T. Leslie, Bailey, Tex., LB, $281,746, 5.108 mi. Hy. FM 45, Proj. C-480-7 & 8 and 1 & 7, Mills and San Saba Counties;
Stephen Luce, 2211 15 St., Vernon, Tex., LB, $63,239. grading, structures 5.466 mi. Hy. FM 1874 Proj. S-1752 (1), Baylor Co.;
R. W. McKinney, P.O. Box 190, Nacogdoches, Tex., LB, $367,816. 22.7696 mi. Hy. SH 11 and 34, Proj. S-755 (1) and (2) Hunt and Fannin Counties;
Reynolds & Huff, P.O. Box 88, Tyler, Tex., LB, $136,975. 9.738 mi. Hy. FM 19, Proj. S-128 (2), Anderson Co.;
Southern Contg. Co., 190 Meadowbrook, Austin, Tex., LB, $97,103. 0.704 mi. Hy. US 277, Proj. S-752 (3), Maverick Co.;
Texas Bitulithic Co., P.O. Box 10365, Dallas, Tex., LB, $72,513. 4.965 mi. Hy. US 80 and 77 Proj. C 95-1 & 2 3 and 24, Dallas Co. CD 10/30;
D. H. Buchanan Constr. Co., 1318 N. 5 St., Temple, Tex., LB, $125,489. 12.04 mi. Hy. FM 1783, Coryell Co. CD 11/5;
Frost Bros., Wortham, Tex., LB, $98,724. 6.71 mi. Hy. FM 642, Proj. S-572 (3), Navarro Co. Bids Nov. 25. CD 11/11.
▲ TEXAS—State Hy. Comn., Austin,
Russell Smith, 1817 Marydale St., Dallas, Tex., LB, $264,710. 2.001 mi. Hy. U.S. 77, Proj. C 196-2-12, Denton Co. CD 11/5; LB $117,396, 1.218 mi. Hy. FM 660 and 813, Proj. C 1048-2-8, Ellis Co.;
W. R. Aldrich & Co., P.O. Box 1751, Baton Rouge, La., LB, $298,380. 0.458 mi. Hy. U.S. 90, Proj. UI 56 (4), Jefferson Co.;
W. L. Barnes, 3102 Perry Lane, Austin, Tex., LB, $113,175. 11.153 mi. Hy. FM 1642, Proj. S 1772 (2) and S 620 (2), Brown and Mills Counties. CD 10/30;
Bell, Braden, Barker & Gilvin Inc., P.O. Box 2268, Amarillo, Tex., LB, $601,122. 2.437 mi. Hy. US 60 and 66, Proj. C 169-1 & 2 8 and 14, Potter Co. CD 11/5;
C. C. Booth, P.O. Box 508, Stephenville, Tex., LB, $96,835. 10.324 mi. FM 1705, Proj. C 1888-1-1, Randall Co.;
Foley & Williams Contractors, 243 Owen Bldg., Tyler, Tex., LB, $154,964. 11.04 mi. FM 593, 993, 1975 and 2057, Proj. S 388 (2), S 1577 (1), etc. Camp and Upshur Counties;
Hugh McMillan, P.O. Box 1227, El Paso, Tex., LB $387,248. 4.166 mi. Hy. US 62, Proj. S 149 (5) and (6), El Paso and Hudspeth Counties;
Menefee Bros. & Alford, P.O. Box 431, Center, Tex., LB, $109,722. 11.097 mi. FM 1005, Proj. R 1275-1-2, Jasper Co.;
Holland Page, P.O. Box 1181, Austin, Tex., LB, $74,596. 5.677 mi. FM 1240, Proj. F-1192-3-1, Falls Co.;
W. O. Pelphrey, 1412 Electric Bldg., Fort Worth, Tex., LB, $769,211. 13.032 mi. Hy. U.S. 80, Proj. FI-235 (16), Martin Co.;
Henry Stafford, P.O. Box 1047, Lubbock, Tex., LB, $163,265. 16.053 mi. Hy. SH 82, Proj. C-292-4 LO, Ward Co.;
T. R. Vardeman & Son, P.O. Box 485, Nacogdoches, Tex., LB, $77,331. 5.75 mi. FM 139, Proj. S-221 (3), Shelby Co. CD 10/30;
So. Tex. Constr. Co., P.O. Box 3536, Corpus Christi, Tex., LB, $102,875. 10.903 mi. Hy. FM 1925, 1425 and 1422, Proj. R-1803-2-1, Hidalgo Co. Bids Nov. 25.
† **Standard Dredging Corp.,** 320 Cotton Exchange Bldg., Galveston, Tex., LB, $254,436. dredging Sabine Pass Channel, Anchorage Basin, Sabine-Neches Canal and Neches River, Jefferson and Orange Counties, Inv. No. CIVENG-41-243-54-36, TEXAS. U.S. Eng., Box 1229, Galveston, Tex. Bids Nov. 24.
Texas Electric Service Co., Electric Bldg., Fort Worth, Tex. Owner Builds. $128,500, electric sub-station, Childress, Childress Co.; CA $175,000, electric sub-station, Seymour, TEXAS. CD 3/6.
† **Cage Brothers,** Rt. 10, Box 46, San Antonio, Tex., LB, $540,872, runway, lighting, taxiway, apron paving, Laredo Air Force Base, Inv. No. Eng-41-243-54-10, LAREDO, TEX. U. S. Eng., Box 1229, Galveston, Tex. Bids Nov. 24. CD 10/13.

BUILDINGS
LOW BIDS AND CONTRACTS

▲ **S. Patti Constr. Co.,** 1340 Admiral St., Kansas City, Mo. LB $1,964,795. general contract;
Geo. R. Jorgensen Plumbing & Heating Co., 1420 Wabash St., Kansas City, Mo. LB $421,947. mechanical contract Junior High SCHOOL, 23 and Garfield Sts., KANSAS CITY, MO. Bd. Educ., Library Bldg., Kansas City, Mo. Bids Nov. 19. CD 10/15.
Hardesty Developments, Inc., 14 S. Central Ave., Clayton 5, Mo. Owner Builds. $300,000. twenty RANCHETTE APARTMENTS on 848x724 ft. site, Olive St. Rd. and Midland Blvd. to Purdue Ave., UNIVERSITY CITY (ST. LOUIS 5 P. O.), MO.
Geer-Maur Co., Grand Island, Neb., CA, $503,997, general constr. Medical-Surgical HOSPITAL bldg. at

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JOB: Paving roof of new Los Angeles postoffice building as landing field for mail-carrying helicopters.
FEDERAL SPECIFICATIONS: Called for compaction with 5-ton roller.
PROBLEM: How to hoist roller to roof of postoffice . . . a risk declined by paving contractors.
SOLUTION: Geisler Construction Co., Los Angeles, proposed use of 3-ton Essick Road Roller, powered by 2-cylinder Wisconsin Heavy-Duty Air-Cooled Engine . . . providing compaction comparable to competitive 5-ton rollers. Authority to do this readily granted and job completed, with satisfactory results.
Just another interesting typical example of how Wisconsin Air-Cooled Engines fit both the JOB and the MACHINE . . . good reasons why it pays to specify "Wisconsin Engine" for your equipment.

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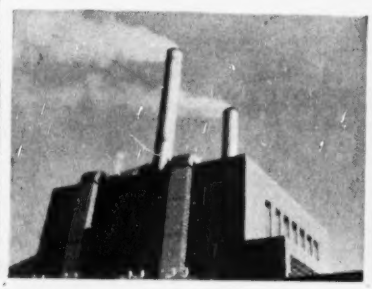

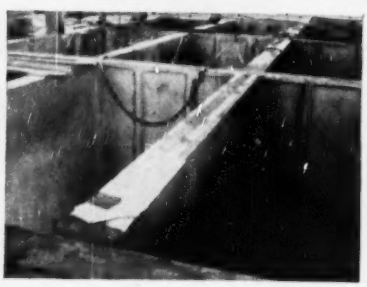

PRECIPITATORS, BREECHINGS, STACKS AND HOPPERS ALL LINED WITH "GUNITE" BY CEMENT GUN CO.

Photos above show units number 1 and 2 of the new 150 m.w. turbo-generator steam electric station of the Pennsylvania Power and Light Company at Sunbury, Pa.

The precipitators, breechings and stacks, visible on the exterior of the building, were all lined with reinforced "Gunite" by Cement Gun Company as were the forty coal hoppers inside the building.

Many instances of repair, remodeling and new construction with "GUNITE" are described and pictured in Bulletin A 2400. A request on your letterhead will bring your free copy by return mail.

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"GUNITE" CONTRACTORS
GENERAL OFFICES – ALLENTOWN, PA., U. S. A.
MANUFACTURERS OF THE CEMENT GUN

Hastings State Hospital, HASTINGS, NEB. State Bd. Control, Capitol Bldg., Lincoln, Neb. Bids Nov. 18. CD 11/25, under LB.

▲ **The Fluor Corp. Ltd.**, 2500 Atlantic St., Los Angeles, Calif. CA Est. $8,500,000. POWER PLANT expansion, LAWRENCE, KAN. Kansas Power & Light Co., 700 Massachusetts St., Lawrence, Kan.

Manhattan Constr. Co., Manhattan Bldg., Muskogee, Okla. CA Approx. $650,000. SYNAGOGUE, TULSA, OKLA. Temple Israel Congregation, 16 and Rockford Sts., Oklahoma City, Okla. Awarded Nov. 10. CD 11/11, under LB.

Charles V. Sumner, 3408 Rankin St., Dallas, Tex., LB, $213,000, 2 story, brick, concrete, steel AUTO bldg., incl. parts, storage, 2 shops, services, sales, etc., DALLAS, TEX. Maher Brothers, Inc., 135 N. Lancaster St., Dallas, Tex. Bids Nov. 20. CD 11/18.

J. C. Worcester, Suite 3, 918 Manor Dr., San Antonio, Tex., CA $634,518, est. $600,000. 65,000 sq. ft. masonry Henry Wadsworth Longfellow Junior HIGH SCHOOL, Zachry Rd. and Sunshine Dr., SAN ANTONIO, TEX. San Antonio Independent School Dist., Lavaca and Matagorda Sts., San Antonio, Tex. Bids Nov. 18. CD 11/25, under LB.

John E. Cooper, 5211 Bayou Glen, Houston, Tex., Purchases, Day Labor, $358,150, 34 DWELLINGS, HOUSTON, TEX. CD 12/6.

▲ **Meadowbrook Building Co.**, 4377 Winkler St., Houston, Tex., CA, $319,190, 32 DWELLINGS; $317,232, 33 DWELLINGS; $369,663, 40 DWELLINGS, near HOUSTON, TEX. Meadowbrook Lumber & Building Co., 4602 Winkler St., Houston, Tex. CD 11/9.

Runyan & Welch, 401 Sue St., Houston, Tex. Owner Builds. $320,000, 16 brick exterior DWELLINGS, concrete slab fdn; $355,000, 19 DWELLINGS, HOUSTON, TEX. CD 11/6.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Wash., Spokane**—ELECTRIC POWER FACILITIES—B.A. 12/22—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, electric power facilities to multi-purpose docks at Fairchild Air Force Base, ENG-45-108-54-87. CD 1/28.

† **Washington**—B.A. 1/5—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, reservoir clearing on Chief Joseph Dam Proj., Columbia River, CIVENG-45-108-54-11. CD 12/4/52.

† **Arizona-California-Nevada**—B.A. 2/4—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing one 145,000 hp. hydraulic turbine, guard valve, turbine inlet pipe for Unit N-8, Hoover Power Plant, Boulder Canyon Proj., Spec. DS-4084; one 168-inch butterfly valve and controls and turbine inlet pipe, Spec. DS-4085, for Unit N-8, Hoover Power Plant, Boulder Canyon Proj.; adv. ENR 12/10. CD 9/21/44.

BIDS ASKED—BUILDINGS

Ore., The Dalles—SCHOOL—B.A. 1/7—School District No. 12, The Dalles, 70,000 sq. ft., rein.-con. Junior High School. $660,000. Plans deposit $50. J. W. Maloney & J. H. Whitney, Larson Bldg., Yakima, Wash., archts. CD 5/12.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Fisher Contracting Co.**, 2201 S. 19 Ave., Phoenix, Ariz., CA, $115,141, firing-in butts, Luke Air Force Base, ENG-04-353-54-28, PHOENIX, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Awarded Nov. 19. CD 11/13/51.

▲ **WASHINGTON**—State Hy. Comn., Olympia,

General Constr. Co., 3840 Iowa St., Seattle, Wash., CA, $1,387,655, substructures for First Ave. S. Bridge piers in Seattle, King Co. Bids Nov. 24. CD 11/27, under LB.

▲† **Fred H. Slate**, 7805 S. W. 40 St., and **E. C. Hall Co.**, 12012 S. W. Barbur St., Portland, Ore., LB $2,591,261, est. $2,738,482, grade, drain 8.7 mi. double track Union Pacific R. R. and 7.1 mi. U. S. Hy. 30, The Dalles Dam site, Wasco Co., CIVENG-35-026-54-45, OREGON. U. S. Eng., Pittock Block, Portland, Ore. Bids Nov. 25. CD 11/4.

† **Guy F. Atkinson Co.**, Box 259, Long Beach, Calif., CA, $994,479, est. $750,000 furnishing, installing tainter gates at Whittier Narrows, El Monte, Los Angeles Co., ENG-04-353-54-4, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Nov. 6. CD 11/19, under LB.

† **Peter Kiewit Sons Co.**, 345 Kieways Ave., Arcadia, Calif., LB, $334,984, Launching Area Missile Warehouse at Naval Air Missile Test Station, NOY 76782, Spec. 37433, POINT MUGU, CALIF. P. Wks. Office, Dpt. Navy, San Diego, Calif. Bids Nov. 19. CD 10/28.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Garon & Co.**, Vancouver, Wash., CA, superstructure covering;

H. Pifer, Vancouver, Wash., CA, equipment foundations in boiler house;

C. L. Beedle Constr. Co., Vancouver, Wash., CA, foundations for boiler house;

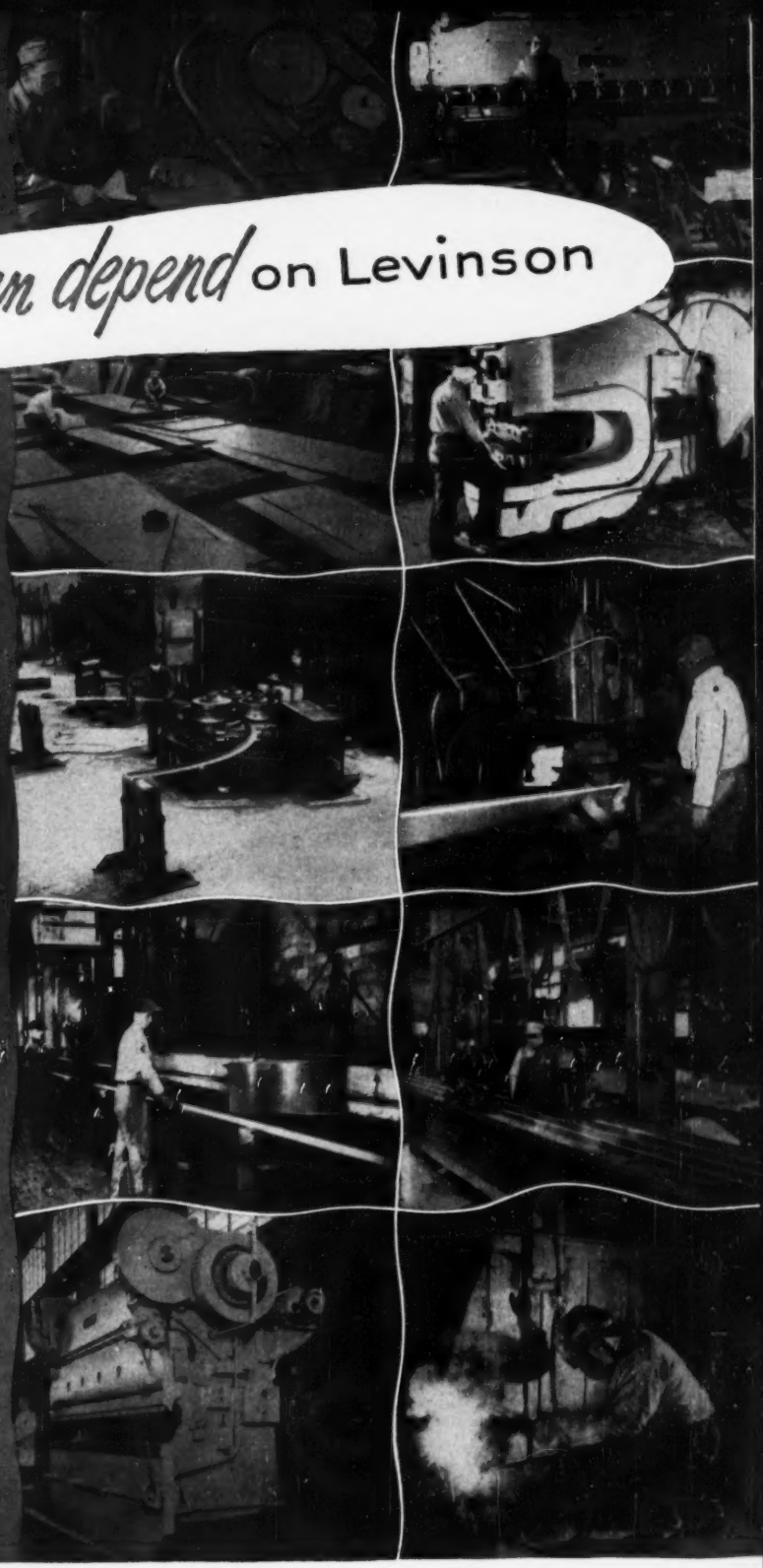
L. H. Hoffman, 715 S.W. Columbia St., Portland, Ore., CA equipment foundations and structural steel erection for extrusion mill;

Parker-Schram, N.E. Cully and Columbia Sts., Portland, Ore., CA road work, for PLANT, VANCOUVER, WASH. Aluminum Co. of America, Gulf Bldg., Pittsburgh, Pa. CD 10/9/51.

Commodore Co., 9838 E. Belmont Ave., Bellflower, Calif., CA, $787,800, 78 frame, DWELLINGS, Alvillis, El

(Continued on page 122)

why you *can depend* on Levinson



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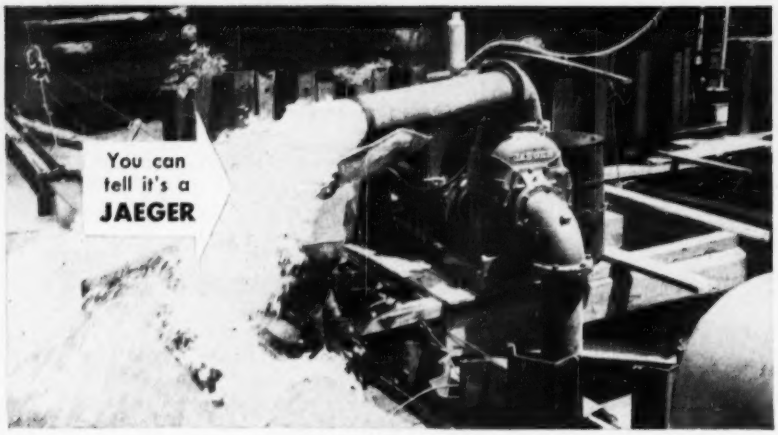

Dewatering 58 ft. deep bridge pier coffer on Cumberland River near Gallatin, Tenn. J. M. Hickman, Contractor.

4000 gpm...at only 1500 rpm

Jaeger builds longer life into small pumps, too.

When you can move 4,000 gallons of water a minute, with diesel fuel economy *and at recommended diesel engine speed*, that's low cost pumping. Ordinary pumps can't do it but a Jaeger 10PD can — because Jaeger Sure Prime pumps are built bigger, to prime and pump at slower speeds than others. It pays off in long engine and pump life — every time.

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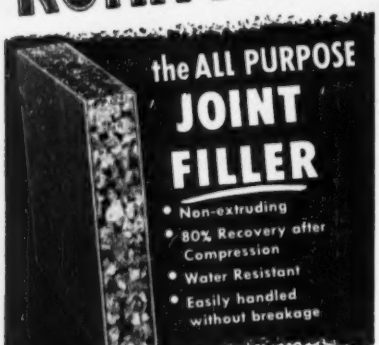

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*KORK-PAK *is one of the many Patented products developed for the Construction Industry by Servicised Products Corp.*

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It's equipment of a thousand uses —for speeding the flow of materials through hoppers, bins, chutes —for vibrating tables or screens in packing, sorting or testing— for effective noiseless vibration in casting, mixing or loading—in fact, wherever a vibrating impact is useful, VIBRO-PLUS offers these exclusive advantages: Greatest ease of attachment — unsurpassed versatility—extreme lightness of weight—and real "heavy duty kick." Tell us your vibrating problems—we'll send you the proper bulletins.

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VIBRO-PLUS PRODUCTS INC.
54-11 Queens Blvd., Woodside, L. I.

(Continued from page 120)

Paseo Shipway, Roxanne Sts., LAKEWOOD, CALIF. Ivy, Juniper, Kaywood Lemon Homes, Inc., 9838 E. Belmont Ave., Bellflower, Calif.

Sponseller & Sons, 1226 W. 58 St., Los Angeles, Calif. Owner Builds. $720,000. 80 frame, stucco DWELLINGS, Walnuthaven, Woodridge and Ellen Sts., WEST COVINA, CALIF.

CANADA

BIDS ASKED—BUILDINGS

▲ **Ont., Toronto**—HEADQUARTERS—B.A. 12/22—Salvation Army of Canada, 538 Jarvis St., 10 story, bsmt., 100x120 ft., steel, territorial headquarters, Albert and James Sts., $1,000,000. John B. Parkin & Assocs., 717 Church St., archts. CD 8/26.

▲ **Que., Montreal**—PLANT, etc.—B.A. 12/23—Benallack Press Ltd., 960 Victoria Square, 1 story 233x386 ft. printing plant, and 2 story 40x233 ft. office, rein.-con., frame, brick, etc. on Boyce St. $1,000,000. R. T. Pringle & Son Ltd., 485 McGill St., engrs. CD 11/9.

LOW BIDS AND CONTRACTS

Ont., Toronto—APARTMENT—J. A. Murray, archt. 6 Heathbridge Park, Toronto soon lets contract five 11-suite apartments, Lawrence Ave. W. and Tremont Ave., North York, for Greenwin Constr. Co., Ltd., 3362 Yonge St., $550,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MANITOBA**—Province of Manitoba, Parliament Bldgs., Winnipeg,

Carter Constr. Co. Ltd., 539 Kylemore Ave., Winnipeg, Man., LB, $1,210,222, grading Trans-Canada Hy. from Falcon Creek to Ontario Boundary 9 mi. east Falcon Creek (Correction-cost). CD 11/27.

▲ **Sir Robert McAlpine & Sons Ltd.**, 38 King St. W., Toronto, Ont., CA, $1,348,656, harbor imprvs. at Toronto waterfront, TORONTO, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Oct. 21, awarded Nov. 24. CD 10/27, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Pigott Construction Co. Ltd.**, Pigott Bldg., Hamilton, Ont., CA, $1,667,000. 6 story, 260x270 ft., rein.-con. brick HOSPITAL, BRANTFORD, ONT. Sisters of St. Joseph, c/o J. O. Trepanier, 148 Dalhousie St., Brantford, Ont. Bids Nov. 5, awarded Nov. 23. CD 10/21.

▲ **Hurun Constr. Co. Ltd.**, Richmond St., Chatham, Ont., LB, $800,000 general contract;

Whaling & Sons, 508 King St., Chatham, Ont., LB, $314,000 plumbing and heating work, for 4 story, bsmt. HOSPITAL addn., CHATHAM, ONT. Chatham Public General Hospital, R. J. Pearce, secy., Chatham, Ont. Bids Oct. 28. CD 10/5.

Ross-Meagher Ltd., 7 Echo Dr., Ottawa, Ont., CA $330,000 OFFICE, Laurier Ave., W. near Bank St., OTTAWA, ONT. The Excelsior Life Insurance Co. Ltd., 36 Toronto St., Toronto, Ont. CD 11/6.

▲ **Doran Constr. Co. Ltd.**, 5 Concord St., Ottawa, Ont., CA, $2,000,000, OFFICE, Kent and Slater Sts., OTAWA, ONT. Kent-Albert Investments Ltd., 53 Queen St., Ottawa, Ont. Burgess & McLean, 53 Queen St., Ottawa, Ont., archts.

▲ **Canadian Bechtel Ltd.**, 44 King St. W., Toronto, Ont., CA, $4,000,000, MECHANICAL SHOPS and PACKAGING PLANT, SARNIA, ONT., Imperial Oil Ltd., 445 Christian St., Sarnia, Ont. Awarded Nov. 16. CD 3/4.

▲ **Foundation Co. of Canada Ltd.**, 1220 Bay St., Toronto, Ont., CA $1,600,000, 1 story, 260,000 sq. ft., steel, brick PLANT, on 12-acre site, Queen Elizabeth Way and Algie Ave., TORONTO, ONT. Hinde & Dauch Paper Co. of Canada Ltd., 43 Hanna St., Toronto, Ont. Awarded Nov. 20. CD 10/9/50.

▲ **Centre Residential La Fleche**, 853 12 St., Grand Mere, Que. Owner Builds. $1,000,000 HOUSING DEVELOPMENT, 12 and 13 Aves., GRAND MERE, QUE.

Proposed Projects

WATER SUPPLY

Mo., Kirkwood (St. Louis 22 P.O.)—City, water sys. imprvs., extens., incl. 1½ m.g. storage tank, larger distr. mains, connection with St. Louis County Water Co. $634,000. Horner & Shifrin, Shell Bldg., 1221 Locust St., St. Louis, Zone 3, consult. engrs.

▲ **Okla., Ardmore**—City, voted bonds Nov. 17, WW exten. $1,126,000. Rex Collins, McAlester, engr. CD 11/2.

Tex., Fort Worth—City, c/o W. O. Jones, mgr., City Hall, water line for west side. $800,000. Joe J. Rady, 511 Insurance Bldg., consult. engr. CD 2/4/49.

SEWERS, WASTE DISPOSAL

▲ **Mo., Columbia**—City, voted $1,300,000 bonds, sanitary sewers, Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs. CD 11/10.

▲ **Tenn., Knoxville**—City, City Hall, 42.7 mi. sewer lines, $2,132,100. CD 2/8/45.

Ont., Brantford—City, City Hall, expansion of city sewerage sys. $500,000. G. H. Richards, c/o owner, city engr. CD 11/13/46.

(Continued on page 125)

You'll have less infiltration . . .

reduce treatment costs . . .

conserve plant capacity . . .

Total infiltration in an all-Transite sewer system (over 5 miles of pipe) was so little the trickle had to be measured through a 3-in. pipe inserted in the Parshall flume!

—Because of this tight joint used with Transite® Sewer Pipe

THE reduction of ground-water infiltration brought about by the Transite Joint—now standard on all sizes of Transite Sewer Pipe—can lead to a number of cost-saving results.

For example, on one recently installed Transite System using 28,540 feet of Transite Sewer Pipe, in diameters of 6 through 18 inches, the infiltration per inch of diameter, per hour, per mile of pipe came to a mere 0.85 gal. This low infiltration (including that from manholes and connections to house sewers) was achieved despite the fact that a considerable portion of this installation was below the prevailing ground water table. (For specification purposes, an infiltration allowance of 10 gallons per inch of diameter, per hour, per mile of pipe may be used with Transite Sewer Pipe.)

Obviously, such minimum ground-water infiltration helps reduce the load on treatment plants, cuts down on treatment costs, and conserves plant capacity for future expansion needs. This reduced infiltration plus Transite's high flow capacity (Manning's N-.010) often permits the use of smaller diameter pipe for new installations.

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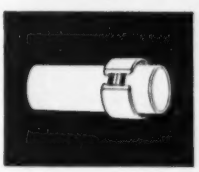
Why this dependable joint cuts your sewage costs



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Johns-Manville Transite Building Sewer Pipe assures a tight sewer system throughout. Many municipal officials are insisting that house and building connections to their sewage lines be made with Johns-Manville Building Sewer Pipe to assure tightness throughout their systems. This pipe also has the rubber ring sealed joint that is shown above.

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(Continued from page 122)

BRIDGES

▲ Mo., St. Louis County—St. Louis County, c/o Luman F. Matthews, co. superv., Court House, vehicular bridge across Missouri River connecting St. Louis and St. Charles Counties, vicinity of St. Charles. $2,000,000. Sverdrup & Parcel, 917 Olive St., St. Louis, Zone 1, consult. engrs. (for preliminary studies).

Wash., Tacoma—Pierce Co., County Court House, bridge from Tacoma to Day Island to present wooden structure, $600,000. W. A. Stancer, co. engr.

▲ Ont., Toronto—Canadian Pacific Ry. Co., Windsor Station, Montreal, Que., subway at CPR crossing at royal York Rd. in suburban Toronto, $1,500,000 T. A. S. Mumford, Room 327, Union Station, Toronto, engr.

STREETS AND ROADS

▲ O., Toledo—City, City Hall,
City Park Ave., widen and resurf. from Anthony Wayne Trail to Dorr St., $60,000.
Detroit Ave., resurf. from Monroe to Buckingham Sts., $110,000.
Franklin Ave., resurf., from Adams to Cherry Sts., $60,000.
Hawley Co., resurf. from Western Ave. to Dorr St., $80,000.
Huron St., widen and resurf. between Cherry and Ash Sts. $80,000.
Jefferson Ave. extens. to Monroe St., $247,350.
Jefferson Ave. resurf., from Collingwood Blvd. to Ontario St., $60,000.
Michigan St., widen and resurf., from Washington to Adams St., $80,000.
Monroe St., widen and imprv. from Auburn Ave. northwest to city limits, $1,000,000.
South Ave. imprv., from Anthony Wayne Trail to Detroit Ave., $70,000.
Summit St., resurf., from Bay View Park to 131 St., $80,000.
Wayne St., resurf., from Westwood to Western Ave. $340,000.
West Bancroft St., resurf., from Upton Ave. to Secor Rd. $100,000.
Wolcott Blvd., resurf., from Berdan Ave. exten. to Ten Mile Creek, $140,000. M. J. Curtis, city street div. engr., John H. Davis, city engrg. comr. CD 10/17/49.

▲ Tex., Edinburg—City, hard type paving for all existing unpaved streets in city, $1,500,000; concrete street curbs and gutters, $100,000.

▲ Alaska, Anchorage—City, City Hall, freeway around city, $1,000,000. CD 10/21/52.

▲ Ont., Toronto—Municipality of Metropolitan Toronto, City Hall, exten. 4 main traffic arteries; Spadina Ave. northward to Wilson Ave. from Dupont St., $11,500,000 for 4.8 miles; exten. Eglinton Ave. East for 3.9 mi. $3,750,000; exten. Eglinton Ave. W., 5 mi. from Keele St. to Hy. 27, $5,000,000; widening Avenue Road from Bloor St. to Clair Ave. W., 1.2 mi., $3,000,000. Harvey Rose, c/o owner, metropolitan roads engr. CD 12/8/47.

EARTHWORK, WATERWAYS

▲ Alabama—Alabama Power Co., Alabama Power Company Building, Birmingham, hydro-electric dam on Coosa River, Calhoun Co., $20,000,000; hydro-electric dam on Coosa River, Elmore Co., $20,000,000; hydro-electric dam on Coosa River, Shelby Co., $20,000,000; hydro-electric dam on Coosa River, St. Clair Co., $20,000,000; hydro-electric dam on Coosa River, Talladega Co., $20,000,000. Southern Services, Inc., Alabama Power Bldg., Birmingham, Ala., consult. engr.

AIRPORTS

▲ Tex., Houston—AIRPORT—The Oil Industry Center Corp. (temporary sponsors), c/o Howe & Wise, consult. engrs., 4119 San Jacinto St., airport. 2,000 acre tract bounded by Main St., Knight Rd. and Old Spanish Trail. Over $1,000,000.

▲† Va., Oceana—HANGARS, etc.—P. Wks. Office, Fifth Naval Dist., U.S. Naval Base, Norfolk, plans by Hayes, Seay, Mattern & Mattern, archts.-engrs., 153 W. Olney Rd., Norfolk, miramar hangars, supply and fueling facilities barracks, fire station, road, walks and utilities, Naval Air Station. $4,440,000. CD 8/13.

LATIN AMERICA

▲ Dominican Republic—Central Romana By-Products Co., c/o South Porto Rico Sugar Co., 99 Wall St., New York, N. Y., plans plant to manufacture furfural from sugar cane wastes. $7,000,000.

Mexico, Mexico City—National Automobile Assn. Cuauhtemoc, 607, Mexico City, plans autodrome, $600,000.

Venezuela, Caracas—Federal Got., Caracas, plans subway to relieve traffic congestion in downtown Caracas. Morrison-Knudsen, Inc., 319 Broadway, Boise, Idaho, U. S. A., consult. engr., is making preliminary studies. CD 12/4/47.

FOREIGN

▲ New Zealand, Auckland—Tasman Pulp & Paper Co., Auckland, plans newsprint mill, pulp mill, railroad, hydro-electric development and town, near here. $80,+

(Continued on page 127)

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✓ Crane Capacity ✓ Work To Be Done
✓ Clearances ✓ Bucket Type and Size

Determine the *closing line pull*; also *size* of closing and holding cables. The *allowable gross load* is the closing line pull or the safe working gross load . . . *whichever is less.* • Consider *headroom clearance* and any other *space limitations* • Determine the *character of the material* to be handled or excavated • Then select the *type, size* and *weight* of bucket, and the proper *accessories* to make the bucket adaptable to your operations.

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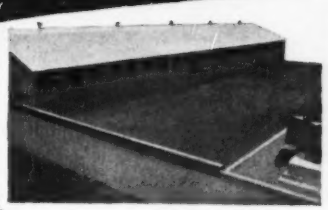

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(Continued from page 125)

000,000. Abitbi Power & Paper Co. Ltd., 408 University St., Toronto, Ont., will give technical assistance.

PUBLIC BUILDINGS

Ark., Magnolia—COURT HOUSE—Columbia Co. bond election Dec. 8, court house, $600,000. Ginnochio, Cromwell & Assocs., Hall Bldg., Little Rock, archts. CD 8/20/45.

† **Calif., Los Angeles**—BUILDINGS, etc.—U. S. Eng., 751 S. Figueroa St., frame buildings, excavating, paving, utilities, etc. for Los Angeles Defense Proj., ENG-04-353-54-31, $700,000.

Calif., Los Gatos—SCHOOL EXPANSION—Los Gatos Union high School Dist., Los Gatos, $500,000 bond election Feb. 16, school expansion.

Calif., Madera—SCHOOL AUDITORIUM—Madera Union High School Dist., Madera, defeated $600,000 bonds school auditorium. CD 10/28.

▲ **Calif., Monterey**—HIGH SCHOOL—Monterey Union High School Dist., Monterey, defeated $1,500,000 bonds, high school addns. CD 11/9.

Calif., Salinas—SCHOOLS—Salinas City School District, Salinas, voted $920,000 bonds, schools. CD 9/22.

Calif., Taft—SCHOOL—Taft Elementary School Dist., N. 6 St., plans by Ernest L. McCoy, 2811 H St., Bakersfield, Roosevelt Elementary School, $700,000. CD 11/3/52.

▲ **Calif., Visalia**—COURT HOUSE—Tulare Co., Court House, plans by Horn & Mortland, 1256 Fulton St., Fresno, court house $3,300,000. CD 5/24/45.

▲ **Conn., Greenwich**—SCHOOL—Town Bd. Educ., Havemeyer Bldg., plans by J. Gordon Carr, 80 W. 40 St., New York, N. Y., 2 story, brick, steel, concrete Junior High School, Lockwood Rd. $2,000,000. Alfonso Alvarez, Jr., 243 Lorraine Ave., Upper Montclair, N. J., consult. archt. CD 5/19.

Conn., Middletown—COUNTY—Middlesex Co., 255 Main St., plans by Guy F. Lamb, 252 Main St., county bldg., Pearl and Washington St. $500,000.

▲ **Conn., Storrs**—SCIENCE—State of Connecticut, Ralph C. Macy, P. Wks. Comr., State Office Bldg., Hartford, plans by Westcott & Mapes, 109 Church St., New Haven, science bldg., University of Connecticut. $1,800,000. CD 1/19/49.

▲ **Conn., West Haven**—SCHOOL—Bd. Educ., Town Hall, plans by Smith & Persse, 956 Chapel St., New Haven, brick Junior High School, Dunham Hill Rd. $1,000,000. CD 1/30.

▲ **Fla., Gainesville**—SCHOOLS—Alachua Co. Bd. P. Instruction, Gainesville, plans by Myrl Hanes Assocs., Gainesville, Williams Elementary School, $400,000; Gainesville Negro High School, $1,000,000; Shell Elementary School, $400,000; plans by Goin & Moore, Gainesville, Gainesville White High School, $1,000,000; Northwest High School, $500,000. CD 11/6.

▲ **Ga., Athens**—ADULT EDUCATION, etc.—Bd. Regents University System of Georgia, 20 Ivy St. S.E., Atlanta, adult education center, $2,190,000; film production center $400,000, both at University of Georgia.

Idaho, Midway—SCHOOL—School District 251, Midway, plans by Fetzer & Fetzer, Zion Savings Bank Bldg., Salt Lake City, Utah, Senior High School, $500,000.

Idaho, Rexburg—SCHOOL—School District A-221, Rexburg, Senior High School. $500,000.

▲ **Md., Upper Marlboro**—SCHOOLS—Dpt. Educ., Prince George's Co., plans by Harden & Dressel, Glen Burnie, Woodridge School, Glenridge, and Morningside School, Morningside, $450,000; plans by Walton & Maddon, 3510 Rhode Island Ave., Mount Rainer, Sheriff Knoll's Junior High School, Hill Rd., Seat Pleasant, $750,000.

▲ **Mass., North Adams**—SCHOOL—City, Robert N. Taylor, supt. Schools, City Hall, plans by Architects Collaborative, 96 Mt. Auburn St., Cambridge, 100x100 ft. high school. $1,750,000. CD 12/17/51.

Mich., Big Rapids—HEATING PLANT—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, brick, steel, concrete central heating plant, Ferris Institute. $700,000.

▲ **Mich., Lansing**—SCHOOL—State, A. N. Langius, dir. State Bldg. Dpt., brick, steel, concrete School for the Deaf. $1,750,000.

▲ **Mich., Lansing**—LIBRARY—State, A. N. Langius, dir. State Bldg. Dpt., brick, steel state library. $2,500,000.

Minn., Mankato—DORMITORY—State, Dpt. Admin., 19 State Capitol, St. Paul, plans by E. H. Schmidt & Co., Mankato, women's dormitory addn. to Cooper Hall at State Teachers College. $500,000.

▲ **Minn., Robbinsdale**—SCHOOL—Bd. Educ., E. J. Cooper, supt., voted $2,400,000 bonds Nov. 17, high school. Haxby, Bissell & Belair, 1111 Nicollet Ave., Minneapolis, archts. CD 10/27.

Miss., Oxford—TRAINING—State Bldg. Comn., Woolfolk State Office, Bldg., Jackson, teacher training bldg. University of Mississippi, $500,000.

Mo., Kirkwood (St. Louis 22 P.O.)—SCHOOL—Kirkwood School Dist. R-7, Bd. Educ., Floyd W. Hendricks, supt., $825,000 bond election Dec. 8, high school, $615,000; Westchester School addn., $60,000; addnl. playground space for Turner and Des Peres Schools, 6 elementary school addns., imprvs., $150,000. CD 3/6.

Mo., Macon—LIGHT PLANT—City, voted $695,000 bond Nov. 17, expansion municipal light plant. CD 11/5.

▲ **Mo., Webster Groves** (St. Louis 19 P.O.)—SCHOOL—Bd. Educ., Leonard A. Steger, supt. Schools, voted $2,600,000 bonds Nov. 17, Junior High School, $1,665,000; Bristol Grade School, $185,000; Hudson School addn., $188,000; Lockwood School imprvs.,

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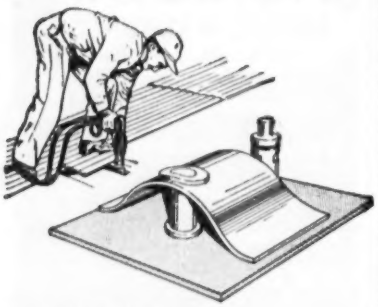

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$48,000; Schall School addn., $160,000; Washington School addn., $194,000; maintenance and storage bldg., $70,000. CD 10/6.

▲ **N. H., Portsmouth**—HIGH SCHOOL—City, City Mgrs. Office, City Hall, plans by Kenneth G. Reynolds & Assoc., 143 Washington Ave., Albany, N. Y. high school, west end, off Summit St. $3,000,000. CD 9/25.

▲ **O., Columbus**—DORMITORIES—Ohio State University, N. High St., expansion of Baker Hall, women's dormitory, $1,300,000; 4 story Dormitory "E" to house 233 co-eds and 8 story tower to serve as connecting link with Dormitory "D". $2,050,000. CD 11/17/44.

Okla., Muskogee—HOSPITAL—City, Muskogee, plans by Hugh Haralson, Muskogee, municipal hospital. $950,000.

S. D., Pierre—HIGH SCHOOL—Bd. Educ., Pierre, high school. $650,000.

▲ **Tenn., Chattanooga**—SCHOOL IMPRVS.—Hamilton Co. Bd. Educ. Court House, voted bonds Nov. 18, school imprvs. $2,231,000. CD 11/3/52.

Tex., Corpus Christi—COURT HOUSE—Nueces Co., Court House, plans by Lynn A. Evans, archt., and O. Roy Abbott, designer, Bevly Bldg., remodeling and constr. court house addn. $600,000. CD 5/17/48.

▲ **Va., Courtland**—HIGH SCHOOL—Southampton Co. School Bd., Courtland, plans by Dixon & Norman, 1103 E. Main St., Richmond, Consolidated High School. $1,000,000. CD 6/2.

Wash., Mercer Island—HIGH SCHOOL—Mercer Island School District, Mercer Island, plans by Bassetti & Morse, 1621 Boren Ave., Seattle, high school, $500,000 bonds voted.

▲ **Wash., Seattle**—GRAIN STORAGE ELEVATOR—Port of Seattle, Bell St. Terminal, Zone 1, 5 million bu. grain storage elevator for lease to Cargill, Inc. $2,000,000. G. T. Treadwell, ch. engr. CD 10/13, under Unclassified. CD 10/13.

Alta., Edmonton—REHABILITATION—Alberta's Workmen's Compensation Board, Edmonton, plans by Aberdeen & Groves, 8411 109 St., 3 story, 65x260 ft., rein.-con. rehabilitation bldg. $600,000. CD 12/26/46.

Ont., Owen Sound—COLLEGIATE, etc.—Owen Sound Bd. Educ., Owen Sound, plans by John Layng, 170 Bloor St. W., Toronto, 2 story collegiate and vocational school, $500,000. CD 10/24/49.

COMMERCIAL BUILDINGS

▲ **Conn., Wethersfield**—OFFICE—The Connecticut Power Co., 226 Pearl St., Hartford, plans by Westcott & Mapes, 109 Church St., New Haven, office, west side of Wolcott Rd., south of Jordan Lane, $1,000,000.

Fla., Deland—DORMITORY—Stetson University, Deland men's dormitory. $600,000. CD 1/20.

▲ **Ind., Gary**—SHOPPING CENTER—Airport Shopping Center, Gary, plans by Max Loewensohn & Assocs., 10 S. La Salle St., Chicago 3, Ill., 900,000 sq. ft. store area, incl. 300,000 sq. ft. major department store, 80 stores, 5 restaurants, parking lot 7,000 car capacity, drainage, paving, lighting, $25,000,000.

▲ **Ind., Indianapolis**—HOSPITAL—Norway Foundation Hospital, 1800 E. Tenth St., plans by D. A. Bohlen & Sons, State Life Bldg., Zone 5, hospital. $1,600,000.

▲ **Mass., Cambridge**—LIVING CENTER—Radcliff College, 10 Garden St., plans by Perry Shaw & Hepburn, Kehoe & Dean, 31 St. James Ave., Boston, masonry graduate living center. $2,000,000.

Minn., St. Paul—SHOPPING CENTER—H. Shenedling Sons Corp., 2025 Nicollet Ave., Minneapolis, plans by G. Becker, 1201 Turners Cross Rd. S., Minneapolis, 450x1,200 ft. Snelling Hub Shopping Center, 100,000 sq. ft. retail shopping space, at County Road D and Snelling Ave. $750,000.

Mo., Cape Girardeau—HOSPITAL—Southeast Hospital, Cape Girardeau, plans by Marcel Boulicault, Ambassador Bldg., St. Louis, 3 story, part bsmnt., ground floor, 44x148 ft. hospital. $500,000.

▲ **N. Y., New York**—OFFICES, etc.—Cosmopolitan Corp., 295 Madison Ave., Zone 17, plans by Emery Roth & Sons, 575 Madison Ave., Zone 22, offices and stores, 545-47 Madison Ave. $1,000,000.

▲ **O., Cleveland**—SHOPPING CENTER—Willowick Estates, c/o Weinberg & Teare, archts., Citizens Bldg., four-structure shopping center, air-conditioned, 4,000 cars parking facilities to be known as Shoregate Shopping Center, Willowick. $7,500,000.

▲ **O., Fremont**—SHOPPING CENTER—Marcus Michles, Fremont, plans by J. W. Johnson, Fremont, shopping center with 22 to 30 stores, State St. $1,000,000.

▲ **O., Sandusky**—SHOPPING CENTER—Realco, Inc., Sandusky, plans by Damon Worley & Samuels, Inc., Engineers Bldg., Cleveland, shopping center with 22 stores, parking for 1,200 cars, Cleveland and Sycamore Rds. $1,000,000.

▲ **S. C., Spartanburg**—SHOPPING CENTER—A. B. Taylor & Assocs., Morgan Square, shopping center. $1,500,000.

▲ **Tex., Houston**—COMMERCIAL BLDG. GROUP, etc.—The Oil Industry Center Corp. (temporary sponsors), c/o Howe & Wise, consult. engrs., 4119 San Jacinto St., commercial bldg. group; shopping centers; hotel group; parking garages, 2,000-acre tract bounded by Main St., Knight Rd. and Old Spanish Trail.

▲ **Tex., Houston**—SCIENCE, STUDENT UNION, etc.—University of St. Thomas, 3812 Montrose Blvd., plans by Maurice J. & Charles F. Sullivan, 3901 Travis St., science-classroom wings, $300,000; students union bldg., $500,000; chapel, $400,000. Francis J. Niven, 3908 Main St., and Bernard Johnson & Assocs., 4926 Travis St., consult. engrs. CD 8/14.

(Continued on page 131)

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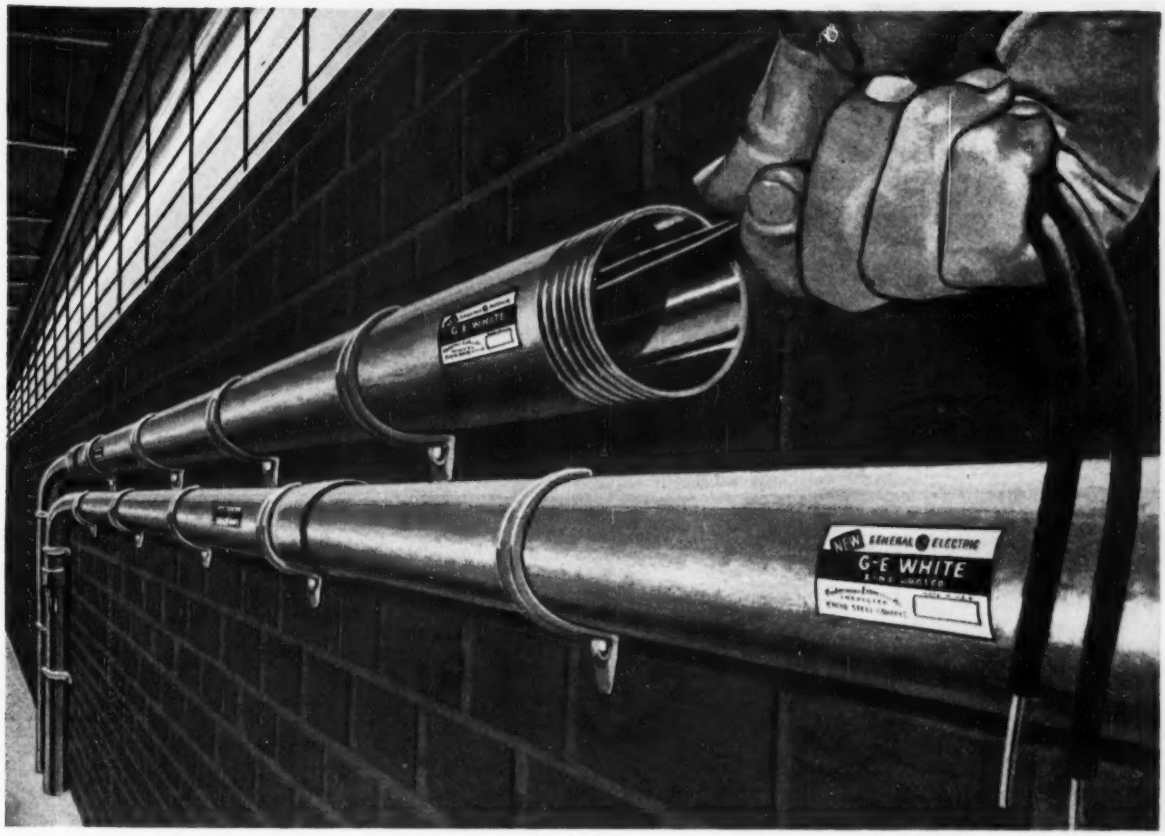

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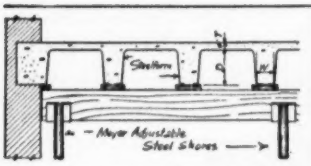

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(Continued from page 128)

▲ **Utah, Salt Lake City**—BANK—Federal Reserve Bank of San Francisco, 100 East South Temple St., plans by Ashton, Evans & Brazier, 24 S. W. Temple St., considerable constr. at present location, sub-bsmnt., security court for armored cars, all roofed over at first floor level and parking deck on top. $1,500,000.

▲ **Wash., Richland** — CHURCH — United Protestant Churches, Richland, plans by J. W. Maloney & J. H. Whitney, Larson Bldg., Yakima, first unit, 1 story, 39x217 ft. church bldg., educational unit, with part bsmnt. $1,000,000.

▲ **Wis., Portage**—HOSPITAL—Divine Savior Hospital, Portage, plans by Maguolo & Quick, 4908 Delmar St., St. Louis, Mo., hospital addn. $1,600,000. CD 3/1/46.

▲ **Wis., Milwaukee**—HOSPITAL—St. Luke's Hospital 3065 S. 29 St., Zone 15, plans by Grassold-Johnsor & Assocs., 734 N. Jefferson St., Zone 2, hospital addn. $1,000,000.

▲ **Ont., Hamilton**—SHOPPING CENTER—Argus Corp. Ltd., 15 King St. W., Toronto, plans by J. B. Parkin Associated, 717 Church St., Toronto, 2 story shopping center on former Hamilton Jockey Club track. $12,000,000. CD 1/26.

Ont., Hamilton—CLUB HOUSE—Leander Boat Club, John St., plans by Prack & Prack, 310 Main St. E., 1 story, stone-faced club house. $600,000.

Ont., Port Arthur—RETAIL STORE—Simpsons-Sears Ltd., Yonge St., Toronto, 1 story, 65,000 sq. ft. retail store, Memorial Dr. and Isabel St. Approx. $500,000.

INDUSTRIAL BUILDINGS

Ala., Mobile—PLANT—Kahn Mfg. Co., 150 N. Royal St., Plant No. 2. $500,000.

▲ **Ga., Athens**—FACTORY—General Time Corp., 109 Lafayette St., New York, N. Y., 100,000 sq. ft. factory, on 56-acre site. $2,000,000.

▲ **Mass., South Hadley**—CHEMISTRY—Mount Holyoke College, South Hadley, plans by Douglas Orr, 111 Whitney Ave., New Haven, Conn., chemistry bldg. $1,000,000. CD 3/29/46.

Mich., Mendon—PLANT—The Mendon Co., Mendon, auto coils plant. $500,000.

▲ **Mo., Kansas City**—PLANT—Westinghouse Electric Corp., Aviation Gas Turbine Div., Bannister Rd. and Troost St., plant expansion program for jet aircraft development center. $30,000,000.

▲ **N. J., Preakness**—RESEARCH CENTER—United States Rubber Co., 1232 Avenue of Americas, New York, 20, N. Y. rubber research center, incl. 90,500 sq. ft. main laboratory, 35,000 sq. ft. experimental laboratory, 8,500 sq. ft. chemical engineering laboratory, garage and power plant, $4,000,000.

▲ **O., Cleveland**—LABORATORY, etc.—Union Carbide & Carbon Corp., 30 E. 42 St., New York 17, N. Y. Campus type physics research laboratory and administrative office bldgs., in Bay Village. $4,000,000.

▲ **O., Cleveland**—PLANT—Tinnerman Products, Inc., 8700 Brookpark Rd., plans by McGeorge-Hargett & Assoc., engrs.-archts., 7016 Euclid Ave., Zone 3, 1 story, brick, 33,000 sq. ft. plant addn., $500,000; 1 story, brick 30,000 sq. ft. plant addn., $500,000.

▲ **O., Euclid**—RESEARCH CENTER—Clevite Corp., 17000 St. Clair Ave., Cleveland, plans by Harris, Miller & Nosek, Hanna Bldg., Cleveland, Zone 14, research center, incl. fourteen bldgs., one two story bldg. and 13 one story bldgs., garden type proj., Euclid Ave. and Richmond Rd. $5,000,000. Barber & Magee, 1900 Euclid Ave., Cleveland, Zone 14, consult. engrs.

▲ **Va., Franklin**—PLANT—St. Regis Paper Co., 230 Park Ave., New York, N. Y., plant to mfg. heavy paper bags. $1,000,000-$1,500,000.

▲ **Sask., Prince Albert**—BREWERY—Sick's Brewery Ltd. 6 Ave., remodeling brewery $1,250,000. M. E. Bell, 3100 Airport Way, Seattle 4, Wash., U. S. A., engr. CD 10/26.

UNCLASSIFIED

Nebraska—RURAL DISTRIBUTION LINES—Custer Public Power Dist., Broken Bow, 489 mi. rural distr. lines, Blaine, Cherry, Hooker, Keith, Lincoln, Loup, McPherson and Thomas Counties. $600,000. Raymond H. Reed & Co., Columbus, consult. engrs. CD 8/20/51.

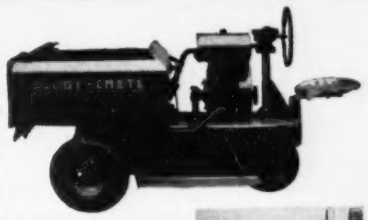
▲ **New Mexico**—RURAL DISTR. LINES—Columbus Electric Co-operative, Columbus, 224 mi. rural distr. lines, 78 mi. 69KV transmission line and sys. imprvs., Luna Co. $1,725,000. CD 2/23/50.

▲ **Oklahoma-Kansas**—GAS LINE—Colorado Interstate Gas Co., Box 1087, Colorado Springs, Colo., 50 mi. 20 in. welded joint gas line, between Hooker, Okla. and point in Morton Co., Kan. $2,250,000.

▲ **Texas**—GAS PIPE LINES, etc.—Tennessee Gas Transmission Co., Commerce Bldg., Houston, 50 mi. 10 in. natural gas lateral pipe lines, Corpus Christi area, Neuces Co., $3,500,000; 4,000 hp. compressor station, near Corpus Christi, Neuces Co., $450,000; 3,500 hy. compressor unit, near Kenedy, $400,000. CD 8/21/47.

Texas—GAS LINES—Texas Eastern Transmission Corp., Texas Eastern Bldg., Shreveport, La., 17 mi. gas lines, Colorado and Jefferson Counties. $875,000.

SCOOT-CRETE



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The Scoot-Crete Model N-45 is fast, nimble and tough to give you lasting service and economical operation. Carries 2,000 lb. pay load up to 7 mph, is only 70" long with a 38" turning radius. Welded steel construction, dependable Wisconsin air-cooled engine, truck-type drive axle and heavy-duty tires all assure trouble-free, all day every day service. Dump box and platform bodies are easily interchangeable on the job.

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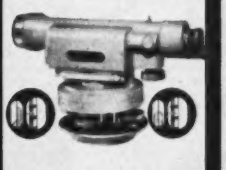
6¼" TRANSIT. Ideal for road-building, railroads, public works.



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ACCURACY AND QUALITY

FENNEL PERFECTED THROUGH 102 YEARS

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
January Materials, and Labor Prices will appear in January 7, 1954 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots Gravel,	Gravel,		CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.; per block		CONCRETE Ready Mixed 1:2:4, over.
	Paper	Bulk	Mortar	1½ in.	¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	50 c.y., del.
Atlanta	$3.87	$3.56	$3.40	$2.075	$2.075	$1.83	$2.20	$2.20	$1.87	$1.99	$0.21	$0.21	$12.06
Baltimore	3.90	3.60	3.53	2.50‡*a*	2.50‡*a*	2.00‡*a*	2.70‡*a*	2.80‡*a*	2.60‡*a*	2.55‡*a*	.17	17*a*	11.45
Birmingham	3.26	2.60*c*	.....	2.53*a*	2.53*a*	2.23*a*	2.64	2.64	1.25	1.45	.165	.165	11.00
Boston	4.16	3.84	3.98	2.50*a*	2.50*a*	2.50*a*	1.50*a*	1.60*a*	.....	.....	.215	.245*a*	12.00*h*
Chicago	3.48	3.17	.....	3.25‡*b*	3.25‡*b*	3.65‡*b*	3.25‡*b*	3.25‡*b*	2.25‡	2.25‡	.23	.23*b*	11.70/11.94
Cincinnati	3.76	3.55	3.55	2.19‡*c*	2.24‡*c*	2.24‡*c*	2.54‡*c*	2.54‡*c*	.....	.....	.21	.225*a*	10.95
Cleveland	N. A. in C. L.	3.04*e*	.....	2.05*ef*	1.85*f*	1.65	4.10*a*	4.10*a*	3.35‡	3.15‡	.....	.22	14.40*d*
Dallas	3.15	2.85	2.90	2.18	2.28	1.84	2.22	2.38	.....	.....	.11*e*	.2675	9.40
Denver	4.04	3.74	4.04	1.80	2.00	1.20	.....	.....	.....	.....	.23	.255*a*	10.50
Detroit	3.77	3.50	3.57	4.25‡*b*	4.25‡*b*	3.75‡*b*	4.25‡	4.25‡	4.25‡	4.25‡	.21	.22*a*	12.00*f*
Kansas City	3.42	3.12	3.20	1.85‡	1.85‡	1.50‡*a*	2.00‡*a*	2.00‡*a*	.....	.....	.20*ag*	.215*c*	12.25*b*
Los Angeles	4.52*a*	4.00*a*	5.00	2.16*a*	2.36*a*	2.11*a*	2.11*a*	2.21*a*	.....	.....	.135*fm*	.237*m*	11.78*lh*
Minneapolis	3.95*d*	3.64*d*	3.56	2.55‡*ag*	2.55‡*ag*	1.50‡*ag*	2.75‡*aq*	2.75‡*aq*	.....	.....	.21*ik*	.....	12.75*i*
Montreal	3.16*ac*	2.96*ac*	.....	3.00*r*	3.00*r*	2.25	1.40*ij*	1.40*ij*	.....	.....	.20	.20*a*	11.10*ik*
New Orleans	3.35	3.02	3.48	2.32	2.32	1.82	.....	.....	1.05	1.25	.25	.....	12.90
New York	4.01	3.70	3.53	2.75*bk*	2.75*bk*	1.80*bk*	2.70*bl*	2.70*bl*	.....	.....	.....	.....	13.55*an*
Philadelphia	3.58/3.97‡	3.27/3.64‡	3.58/3.63‡	2.75‡*ep*	2.75‡*ep*	2.15‡*ep*	2.30‡	2.40‡	2.00	1.90	.22/.25	.....	12.50*ao*
Pittsburgh	3.47	3.19	3.47	2.25‡	2.25‡	2.20‡	2.60‡	2.60‡	2.15	2.15	.22*d*	.22	13.00
St. Louis	3.42/3.63*b*	3.09/3.35*b*	3.25/3.42	2.90*am*	2.90*am*	2.30/2.90*am*	1.70*j*	1.70*j*	1.50	1.50	.22	.28*cf*	11.40
San Francisco	3.56	3.16	.....	1.92	1.92	2.02	2.02	2.02	.....	.....	.....	.27*cf*	11.25*c*
Seattle	4.65*a*	3.35*a*	5.80*b*	3.00‡*bm*	3.00‡*bm*	3.00‡*bm*	3.50‡*bm*	3.50‡*bm*	.....	.....	.25*i*	.3325*i*	11.40*i*

‡ Delivered. * Prices incl. dealers discount except as noted.
CEMENT: *a* Subj. to 10¢ dis. *b* Less 2% for cash. *c* CL price dealers discount not incl. *d* Dealers sell only LCL. *e* Truckload lots, destination price. *h* LCL. SAND, GRAVEL, STONE & SLAG: *a* Truck lots. *b* Per cu. yd. *c* 5 tons or more. *e* ½". *f* Pea gravel. *g* Less 5% for cash. *h* Less than 5 tons. *i* Sales tax incl. *j* F.o.b. quarry. *k* Barge lots asd. *l* F.o.b. scow Hudson river. *m* Less 2% for cash. *n* F.o.b. cars. *o* 1–3 mi zone. *p* Add 10¢ for ea. add'l 3-mi zone.
CONCRETE BLOCK: *a* Cinder. *b* Waylite. *c* Haydite. *d* Celocrete. *e* 5¼ x 8 x 12 in. *f* 8 x 4 x 16. *g* F.o.b. truck at job. *i* Less 2% for cash. *j* Less 1% for cash. *k* 8 x 8 x 18. *l* F.o.b. plant San Rafael. *m* F.o.b. yard.
READY MIXED CONCRETE: *a* 5 cu. yds. or over del. Man. *b* 25 cu. yds. or more. *c* 10–100 cu. brackets. *d* 1–3 mi. zone. *e* 2,000 lb comp. *f* 2500 lb. comp. *h* Less 50¢ for cash. *i* 5% off for cash. *j* 2% off for cash. *k* Sal.s tax included. *l* 1:2½:4. *m* F.o.b. yard. *n* Plus escalator clause. *o* Add 15¢ for ea. add'l d-mi zone.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 30¢ per bbl., not refundable.

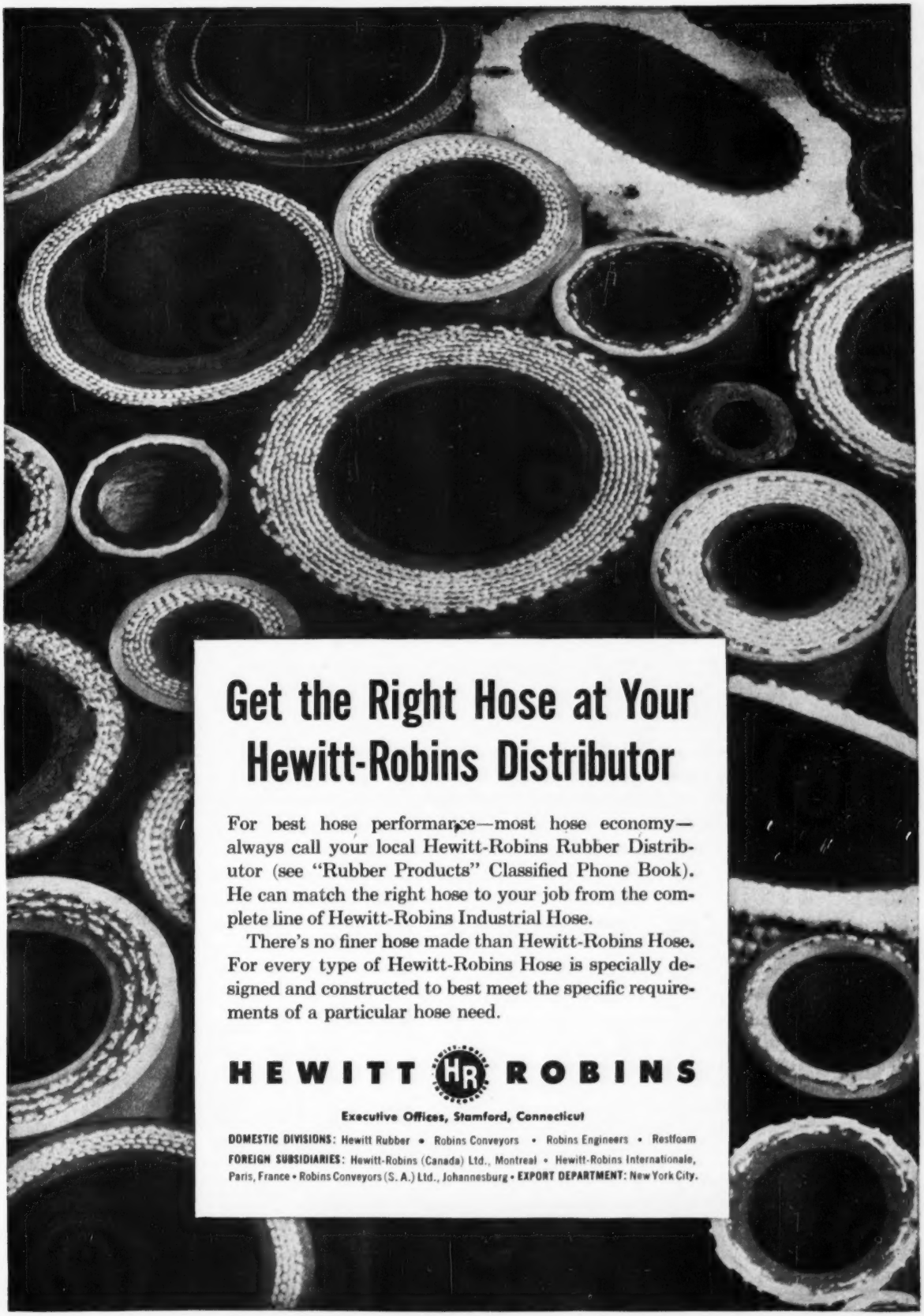
	Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$2.75†	Buffington, Ind	$2.70†	Steelton, Minn	$2.80†	Muskegon, Mich	$2.85†	Toledo, O	$2.75†
Clinchfield, Ga	2.75†	Independence, Kan	2.65†	Leeds, Ala	2.60†	Saginaw, Mich	2.75†	Milwaukee, Wis	2.90†
Kingsport, Tenn	2.75†	Hannibal, Mo	2.70†	Duluth, Minn	2.80†	Wyandotte, Mich	2.75†	Green Bay, Wis	2.90†
West Des Moines, Iowa	2.80†	Northampton, Pa	2.75†	Hudson, N. Y.	2.75†	Buffalo, N. Y.	2.75†	Ironton, O	2.75†
Nazareth, Pa	2.75†	Universal, Pa	2.80†	Alpena, Mich	2.65†	Oswego, N. Y.	2.90†	Montreal City	2.66
Bath, Pa	2.75†	Waco, Tex. (+ 10¢ tax)	2.60†	Detroit, Mich	2.75†	Cleveland, O.	2.75†	W. Winfield, Pa	2.80†

† *Prices to hold for fourth quarter of* 1953.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	PAVING ASPHALT Per ton, less than 80 penetration Tank car	Drums	ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration Tank car	Drums	CUTBACK ASPHALT Per ton Tank car	Drums	ROAD OIL Per gal. Tank car	ASPHALT EMULSION (quick-breaking) Per gal. Tank car	Drums
Atlanta	$82.00	$41.00	$2.25	$26.00	$33.25	$0.215	$0.455	$0.095*w*	$0.185*w*	$0.105	$0.115	$0.225
Baltimore	150.00‡	75.00‡	.....	22.00*i*	.....	.0809*i*	0.15*i*	.09*iw*	.17*iw*	.09*i*	.09*i*	0.12*i*
Birmingham	.....	45.50*i*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	24.50*a*	35.50*a*	22.00*ae*	35.50*ae*	.....	.....	.09*a*	.195*a*	.22*a*
Chicago	155.00‡	90.00‡*b*	3.60/3.65‡*j*	21.05*b*	31.05*b*	20.05*bv*	30.05*bv*	.0925*bw*	.1825*bw*	.0775*b*	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	200.00	65.00*d*	5.03*g*	23.00[4]	.....	23.00[4]	.....	.1025[4]*w*	.....	.....	.11[4]	.18[4]
Dallas	*e*	40.00	*e*	24.05	43.09	.1016	.2103	27.09	47.87	.098	.1014	.2128
Denver	.....	50.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	98.00	.....	27.21	.....	27.21*v*	.....	.1202*w*	.....	.0925	.....	.2811
Kansas City	*e*	*e*	*e*	16.20*el*	.....	.06	.....	.07[5]*w*	.....	.06*e*	0.10	.....
Los Angles	*e*	.....	*e*	16.00*dmx*	.....	16.00*dex*	.....	18.00*dx*	.....	17.00*de*	.0825*j*	.1725*j*
Minneapolis	.....	.....	2.97*h*	22.00	.....	24.07	.....	.0744*w*	.....	.08	.10	.....
Montreal	.....	*e*	*e*	27.10*n*	36.65*n*	.135*n*	.193*n*	16.30*nu*	18.80*nu*	.132*n*	.184*ns*	.225*ns*
New Orleans	.....	.....	.....	17.50*e*	....*o*	17.50*ev*	....*o*	.085*ew*	....*o*	.0825[3]	.085	.....
New York	.....	.....	2.93*f*	26.26*q*	47.59*q*	25.26*et*	46.58*et*	.1071*w*	.2021*w*	.1071	.1072	.1993
Philadelphia	175.00	110.00	4.06	22.00	.....	.....	.....	.095*u*	.....	.....	.....	.....
Pittsburgh	165.00	48.00	4.60	27.00	37.00	.10	.21	27.00	40.00	.095	.10	.22
St. Louis	.....	.....	.....	18.66*f*	.....	.1758	.....	.084/.0865*w*	.....	0.155	.10	.....
San Francisco	.....	55.00*e*	.....	17.50*q*	33.00*qp*	17.50*qkv*	33.00*qkv*	20.00*q*	37.50*q*	18.75*e*	.085*u*	.....
Seattle	.....	.....	.....	17.50*h*	38.00*h*	17.25*he*	.....	20.00*h*	.....	19.75*he*	.085*h*	.095*e*

‡ Delivered.
PAVING BRICK & BLOCK: *a* CL. *b* 3½ x 4 x 8½. *c* 2¾ x 8¼ x 4. *d* LCL, truck deliveries. *e* Not used. *f* 2" interior 6¢ treat. *g* 3" *h* 8¢ treat. *i* 3 x 3½ x 8½. *j* 2½", 6 tr
ASPHALTS: *a* Price at plant, Everett, Mass. *b* F.o.b. refinery Lockport, Ill. *c* F.o.b. Sugar Creek, Mo. *d* F.o.b. refinery, El Segunda. *e* F.o.b. Baton Rouge. *f* F.o.b. Wood River or Roxana, Ill. *g* F.o.b. Richmond, Calif. *h* F.o.b. Martinez. *i* F.o.b. refinery, Baltimore. *j* F.o.b. refinery, Inglewood, Calif. *k* 50–110 penetr. *l* Less than 100 penetr. *m* 40–80 penetr. *n* Tax incl. *o* Drums not avail. *p* Shipped in steel bbl. *q* 40–85 penetr. *r* In customer's drums. *s* Shipped in drums, per drum. *t* 85–300 penetr. *u* Per 100 gal. *v* Per ton. *w* Per gal. *x* Also tank trucks *y* F.o.b. Oakland. [4] F.o.b. refinery, Cleveland. [5] F.o.b. Norco, La.



Get the Right Hose at Your Hewitt-Robins Distributor

For best hose performance—most hose economy—always call your local Hewitt-Robins Rubber Distributor (see "Rubber Products" Classified Phone Book). He can match the right hose to your job from the complete line of Hewitt-Robins Industrial Hose.

There's no finer hose made than Hewitt-Robins Hose. For every type of Hewitt-Robins Hose is specially designed and constructed to best meet the specific requirements of a particular hose need.

HEWITT HR ROBINS

Executive Offices, Stamford, Connecticut

DOMESTIC DIVISIONS: Hewitt Rubber • Robins Conveyors • Robins Engineers • Resifoam
FOREIGN SUBSIDIARIES: Hewitt-Robins (Canada) Ltd., Montreal • Hewitt-Robins Internationale, Paris, France • Robins Conveyors (S. A.) Ltd., Johannesburg • **EXPORT DEPARTMENT:** New York City.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. structural	SHEET PILING	STEEL RAILS Per Net Ton			TRACK SUPPLIES			
					Base	Standard	Light	Re-rolled	Angle Bars	Std Spikes	Tie Plates	Track Bolts
Birmingham Area	$4.10	$4.10	$4.15	$8.90	....	$86.50	$104.00	Not	$5.275	$7.05	$5.125	....
Chicago Area	4.10	4.10	4.15	8.90	$4.925	86.50	104.00	avail-	5.275	7.05	5.125	....
Pittsburgh Area	4.10	4.10	4.15	8.90	4.925	86.50	104.00	able	5.275	7.05	5.125	$11.00
Buffalo Area	4.10	4.10	4.15	8.90	4.925	86.50	104.00	....	5.275	7.05	5.125	11.00
Cleveland	....	....	4.15	8.90	4.925	.....	.....	....	....	....	.....	11.00
Youngstown Area	....	....	4.15	....	....	.....	.....	....	....	7.05	.....	....
Geneva	4.10	4.10	....	....	....	.....	.....	....	....	....	....	....
Los Angeles	....	....	....	....	4.925	.....	.....	....	....	7.05	....	....
Pueblo	4.30	4.70	4.75	....	....	.....	98.00	....	5.275	7.05	5.125	11.00

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price u 5 tons to carload lot b New billet	Rail steel	Add switch	$/cwt for Del.	EXPANDED METAL LATH Per 100 sq. yd., carload lots Std. diamond mesh. 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING Per 100 sq. ft., carload lots 4x16 in., No. 5 & 10 wires	4x12 in., No. 8 & 12 wires	6x6 in., No. 6 & 6 wires
Atlanta	$7.31	$7.11	$7.11	$.025	$...	$38.00‡	$42.00‡			
Baltimore	6.98	6.91f	....	....	....	42.00	45.00			
Birmingham	6.35	6.15	6.15	.05	.15	47.00p	52.00p			
Boston	7.06a	7.22	7.22	....	...	40.50	44.50			
Chicago	6.46	5.75ff	5.75ff	.0625	....	46.00C	51.00C			
Cincinnati	6.93ak	6.91r	....	....	.15	39.00sss	43.00sss			
Cleveland	6.79	5.61e	....	...	...	39.00‡	43.00‡			
Dallas	9.05	7.25	7.25	...	...	49.00	52.00			
Denver	7.95	7.30e	....	...	...	52.50s	64.50qs			
Detroit	6.93	7.04n	...	...	.20	50.50	54.50			
Kansas City	7.05nn	7.27	....	...	...	43.50	45.00			
Los Angeles	7.35/hh	6.85g	...	...	...	51.00	57.00			
Minneapolis	6.92hh	7.53ll	7.53ll	...	...	37.00	41.00			
Montreal	8.20iB/9.20A	6.05i	6.05g	...	...	53.50h	58.50h			
New Orleans	....	5.98ok	....	.05	...	66.00	60.00			
New York	7.20	7.01	7.01	...	.30	38.50at	44.00at			
Philadelphia	6.42	6.67	....	...	...	38.00‡	42.00‡			
Pittsburgh	6.40	6.40	....	...	.10	37.60	39.60			
St. Louis	6.86a	6.30e	6.30r	...	...	55.00aa	56.00aa			
San Francisco	7.25	6.85l	....	...	...	40.50	43.50			
Seattle	4.85e	6.20al	....	...	...	51.00mm	57.00mm			

A.P.M.* Joliet, Illinois, Donora, Penn., $3.08
F.o.b. Mill: Monessen, Penn., $3.08

A.P.M.* Joliet, Illinois, Donora, Penn., $2.02
F.o.b. Mill: Monessen, Penn., $2.02

A.P.M.* Joliet, Illinois, Donora, Penn., $3.23
F.o.b. Mill: Monessen Penn., $3.23

* At Producing Mill.

‡ Delivered. *b* Less than 700# add 50¢; 700–1499# add 65¢; 1500 to 7999# add 50¢. *c* 20 tons or over base. *d* Mill price plus freight. *e* F.o.b. plant. *f* Includes delivered in free delivery zone. *g* 10,000 to 39,999 lbs. *h* List price. Dominion tax exempt. Provincial and Municipal tax extra. *i* Plus Dominion, Provincial and Municipal sales tax. *k* F.o.b. city. *l* Intermediate and hard grade, new billet. *m* Per sq. yd. *n* 5–10 tons. *o* 5 to 20 tons base. *p* Del. of 500 sq. yd. or more. *q* Std. ribbed, 4 lb. per sq. yd. *r* 5 tons or over. *s* LCL. *t* Asphalt coated. *u* Note: Revised size extra—1 in., 1¼ in., 1½ in., 30¢, ¾ in., ¾ in., 45¢, ⅝ in., 55¢, ½ in., 80¢, ⅜ in., $1.10, ¼ in., $2.20. *v* 20 tons. Straight. *w* Copper bearing. *y* $0.0093 transportation tax included *z* Copper alloy. *aa* Delivered truck to job. Contractor to do unloading. *ee* F.o.b. cars. *ff* Carload lots. *gg* Including sales. *hh* 10,000–19,999 lbs *ll* 5 to 8 tons, f.o.b. city. *mm* 2% off for cash. *nn* 1–5 tons. *ii* 10 tons to CL. *aa* 2000–9999 lbs. *A.* Amer. struct'l shapes. *B.* Canadian shapes. *C.* Deliv to contractor.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in.a	ASBESTOS CEMENT PIPE per lin. ft., f.o.b. city 6" Pr Cl. 150	12" Sew Cl. 1	VITRIFIED SEWER PIPE Per ft., Delivered ASTM C13–44T std. 8 in. s.s.	std. 12 in. s.s.	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4–24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTM C 14–41 12 in.	24 in.
Atlanta	$101.00	$1.45	$2.42	$ .545	$1.27	$4.82	$12.925	$248.00	$356.00	$0.90	$3.40
Baltimore	121.50	1.45	2.42	.518	.999	4.095A	11.1725A	178.20	274.80	.95	3.60
Birmingham	108.00	1.45	2.42	.42	.75	2.99	....	250.00‡	375.00‡	1.25m	2.75m
Boston	122.00	1.47	2.20	.553uvz	1.0665uvy	4.41uvy	11.90uvy	187.80z	289.20z	1.62mg	3.95mg
Chicago	107.00	1.45	2.20	.70m	1.35m	5.62m	13.50m	150.00‡	270.00‡	.80	2.80
Cincinnati	106.00	1.47	2.29	.581y	1.120y	4.41y	11.375y	164.40	254.10	.80m	2.95m
Cleveland	108.00	1.47	2.29	.462z	.945z	3.66z	10.04z	188.00m	245.65m	.82m	3.10m
Dallas	112.00	1.47	2.54	.436	.822	3.234b	9.17b	.....	.....	.49	1.60
Denver	115.00	1.53	2.54	.45dd	.78dd	3.48dd	....	.....	.....	.74m	2.50m
Detroit	105.00	1.47	2.29	.75A	1.45A	5.75A	15.50A	240.00m	360.00m	.86	3.47
Kansas City	113.00	1.47	2.29	.53	.945	3.87	10.60	250.00	480.00	.80g	3.25g
Los Angeles	126.25	1.53	2.29	.62f	1.26f	5.21f	14.80f	228.20f	348.90f	.95	2.75ff
Minneapolis*	112.00	1.49	2.42	.72mo	1.32mo	5.32mo	....	.....	.....	1.58h	3.93h
Montreal	110.00	....	....	.85z	1.50z	5.25z	8.50z	.....	.....	1.17h	3.11j
New Orleans	101.50	1.45	2.42	.53	.965	5.13	....	300.00bb	500.00bb	.65	2.29
New York	111.35	1.47	2.20	.61	1.22	4.82	12.81	.....	.....	1.15	3.00
Philadelphia	110.00	1.45	2.20	.65	1.25	4.95A	12.65A	300.00‡	350.00‡	1.60h	3.95h
Pittsburgh	110.00	1.47	2.20	.428m	.794m	2.97m	7.92m	152.00	244.00	1.05h	2.50h
St. Louis	112.00	1.45	2.29	.56	1.03	4.22	9.50	180.00l	380.00l	1.20il	2.85Al
San Francisco	127.00	1.53	2.29	.61d	1.20d	5.08d	12.57d	240.00l	400.00l	.73	3.02
Seattle	122.00	1.54	2.42	.51b	.91b	....	....	150.00c	.....	.77es	2.30es

*WROUGHT STEEL PIPE (Full standard weight) Discount from list see footnote

Mill	3½ to 6 in., Lap Weld† Black %	3½ to 6 in., Lap Weld† Galv. %	2½ & 3 in., Butt Weld† Black %	2½ & 3 in., Butt Weld† Galv. %
Lorain, Ohio	27.75a	11.00a	36.75	20.50
Aliquippa, Pa.	27.75a	9.75d	36.75	20.50
Sparrows Pt., Md.	22.75a	6.00	34.75	18.50
Benwood, W. Va.	26.50d	9.75d	36.75	20.50
Youngstown, O.	36.75ab	10.00b	36.75	20.50
Indiana Harbor, Ind.	36.75ab	10.00b	35.75	19.50
Sharon, Pa.	27.75a	11.00a	36.75	20.50
Wheatland, Pa.	26.50d	7.75d	36.75	20.50
Etna, Pa.	14.75ab	0.50ab	28.75	12.50
Fontana, Calif.	23.75b	10.00b	23.75b	10.00b

‡ Threaded and coupled. *a* 3½ to 4 in. *b* Continuous weld. *c* 5 and 6 in. *d* 6 in.

‡ Delivered. *a* Class B & heavier. Based on existing freight rates; subject to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $7 per ton additional. 30 in. and larger, usually, $1 per ton less. *b* Extra strength ASTM C 200–44T. *c* 4-in., $90. *d* 88361-A. *e* 30-in. *f* F.o.b. factory. *g* Culvert pipe. Reinforced, ASTM C76–41. *h* Reinforced, ASTM C75–41. *i* Reinforced, ASTM C76–37. *j* Centrispun. No. standard specifications in Can. *l* F.o.b. plant. *m* Truck delivery. *o* Listed price is based on LCL (no minimum). *u* ASTM C13–40. *v* C.L.f.o.b. origin, freight allowed. *x* 2 ft. lengths. *y* 3 ft. lengths. *z* CESA A 60–1941 specifications used. *aa* Extra strength ASTM C-200–50. A standard strength. *6", $1.67 per ft.; carlots, F.o.b. track Class 150. *bb* Freight allowed to destination in city. *dd* LCL delivered, f.o.b. truck. *ee* 2% off for cash. *ff* 21". A. Correction: Nov. prices same as Dec.

* WROUGHT STEEL PIPE: Deduct discounts shown above from the following standard list consumers carload prices to get mill price. List prices per ft. (based on approx. $200 per net ton): *Butt Weld* ⅛ in., 5½¢; ¼ in., 6¢; ⅜ in., 6¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. *Lap Weld* 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Add freight rates plus 3% transportation tax to get destination price.

WROUGHT IRON PIPE: List prices per ft. same as for wrought steelpipe, but add following "discounts" to get Pittsburgh mill price: *Butt Weld* — 1 in. black, + 32.75, galv. + 57.0; 1¼ in. black, + 32.75, galv. + 56.5, 1½ in. black, + 29.25 galv. + 52.75; *Lap Weld* — 2½ in. to 3 in. black + 33.50 galv. + 55.5; 4½ in. to 6 in. black + 30.50 galv. + 50.75. Add freight rates plus 3% transportation tax to get destination price.

LOW COST STORAGE
IN THE
MILLION GALLON
RANGE

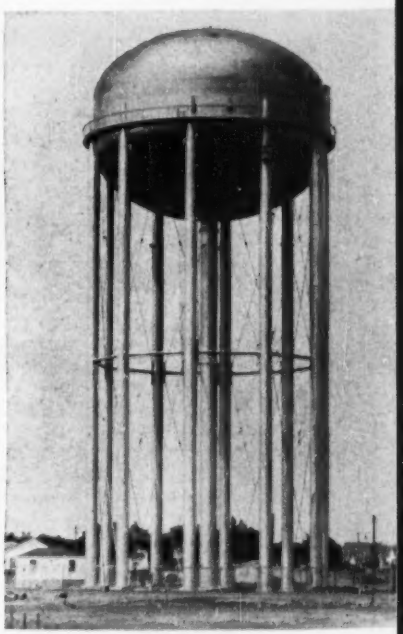
PITTSBURGH-DES MOINES

DOUBLE-ELLIPSOIDAL

Elevated Steel Tanks

ST. LOUIS PARK, MINNESOTA
Diameter 65 ft.
Head range 48 ft. 5 ins.
H-column tower, 106 ft.

SANDUSKY, OHIO
Diameter 68 ft.
Head range 42 ft.
H-column tower, 81 ft.



AMARILLO, TEXAS
Diameter 68 ft.
Head range 42 ft.
Tubular column tower, 114 ft.

Write for this well-illustrated, comprehensive Catalog of the complete range of P-DM Elevated Steel Tanks, without obligation.

The intrinsic design economy of our famous Double Ellipsoidal Elevated Steel Tank makes this type particularly attractive where low cost with good appearance is a major consideration. Clean cut lines without ornamentation enable savings in construction that are reflected in the purchase price. Fine, simple proportions result in a handsome structure for the community. Let us give you the details on our Double Ellipsoidal and other elevated tank types in a personal meeting, at your convenience.

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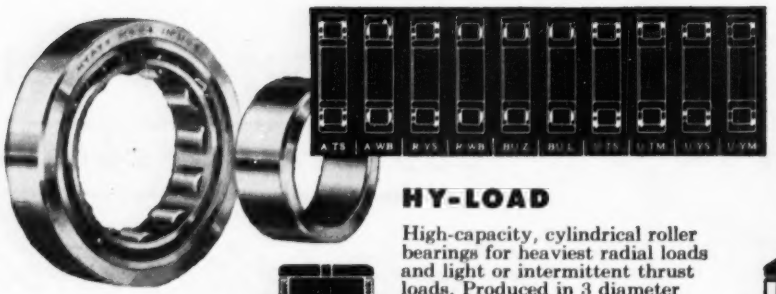
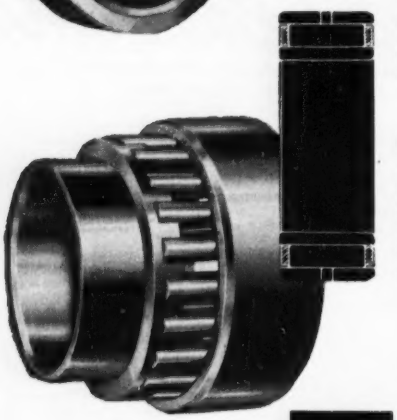
Sales Offices at:

PITTSBURGH (25) . . . . . 3414 Neville Island
NEWARK (2) . . . 216 Industrial Office Bldg.
CHICAGO (3), 1218 First National Bank Bldg.
LOS ANGELES (48), ... 6399 Wilshire Blvd.
DES MOINES (8), 915 Tuttle Street
DALLAS (1), 1219 Praetorian Bldg.
SEATTLE . . . . . 522 Lane Street
SANTA CLARA, CAL., 621 Alviso Road



HY-LOAD

High-capacity, cylindrical roller bearings for heaviest radial loads and light or intermittent thrust loads. Produced in 3 diameter series, 2 widths and more than 800 sizes.

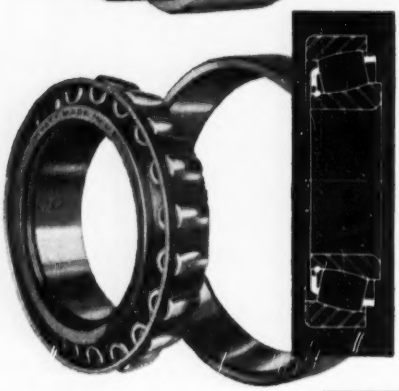


INDUSTRIAL INCH

Designed for slow-moving, heavily loaded machinery where large-diameter shafts are the rule; Accordingly, it is available in fractional-size bores for shafts from 4" in diameter upwards.

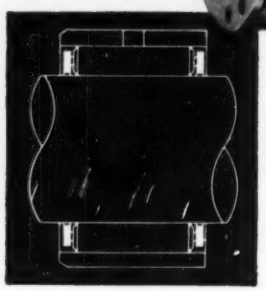
WOUND ROLLER

This is a three-part separable bearing available in various width classifications. The roller construction provides maximum resistance to shock, abrasion and fatigue.



BARREL

A series of angular-contact, self-aligning bearings capable of sustaining both radial and thrust loads. Race and roller curvatures insure ideal distribution of load, not only for normal operation but also for conditions of misalignment.



TRUNNIONED ROLLER

Ideal for industrial trucks, textile machinery, gear pumps, conveyors, hoists and agricultural equipment. Rollers have trunnioned ends which fit into holes in the end rings. End rings are located and held parallel by spacing bars which also guide and retain rollers.

DESIGNED FOR HEAVY DUTY...

HYATT ROLLER BEARINGS

...and there's a type and size for every need

Hyatt's complete line of radial and angular-contact bearings—*more than 800 sizes in the Hy-Load series alone*—makes the engineers' job easier, because it makes possible greater design flexibility. For the equipment *buyer*, this means longer bearing life and lower maintenance costs—with just the right bearings designed into every vital load-carrying position.

The next time you buy new equipment, or make a changeover, *specify lower maintenance costs by specifying Hyatt Bearings!* And if you need technical help in your selection of bearings, or desire information about particular bearings or their applications, ask for the services of a Hyatt sales-engineer. Call or write Hyatt Bearings Division, General Motors Corp., Harrison, N. J.

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F. O. B.

	SHORT LEAF YELLOW PINE AND DOUGLAS FIR — All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)									LONG LEAF Y. P.		PLYWOOD Rail freight increment (See note for base prices)	
	All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1 Lengths up to 20 ft. (Prices in italics)									Merchantable grade up to 20 ft.			
	1x6 S4S	1x8 S4S	2x4 S4S	2x6 S4S	2x8 S4S	2x10 S4S	3x12 Rgh	6x12 Rgh	12x12 Rgh	2x12 Rgh	12x12 Rgh	¾"	¾"
Atlanta	† $79.00	$82.50	$73.50	$76.00	$79.50	$83.00	$81.00	.....	.....	.....	.....	$22.32	$27.24
Baltimore	* 91.50	95.50	79.00	79.00	79.00	86.00	113.00	.....	.....	$155.00	$155.00	25.92*	31.60*
	102.00g	*102.00g*	*94.00g*	*94.00g*	*94.00g*	*94.00g*	*96.00*	*$105.00*	*$108.00*	.....	.....	.....	.....
Birmingham	† 80.50	82.50	70.50	80.50	83.50	85.50	95.50	.....	.....	115.50	155.50	21.78	26.58
	75.50	*75.50*	*70.50*	*70.50*	*70.50*	*69.50*	*75.50*	*75.50*	*75.50*	.....	.....	.....	.....
Boston	92/97a	91/100a	88/96*	90/98a	93/100a	96/105a	.....	.....	.....	.....	.....	25.92*	31.60*
	‡ *92.00a*	*92.00*	*90/94*	*92/94*	*90/94*	*90/94*	*100.00*	*108.00*	*110.00*	.....	.....	.....	.....
Chicago	** 94.00	97.00	85/86	94.00	96.00	99/100	103.00	.....	.....	132.00	132.00	22.45*	27.37*
	94.00	*94.00*	*98.00*	*98.00*	*99/100*	*101/102*	*107.00*	*107.00*	*107.00*	.....	.....	.....	.....
Cincinnati	* 94.00	100.00	83.75	93.00	100.00	102.50	116.50	.....	.....	140.50	140.50	25.00*	30.48*
	104.00	*104.00*	*106.00*	*104.25*	*105.75*	*104.00*	*130.50*	*130.50*	*130.50*	.....	.....	.....	.....
Cleveland	** 92.00	94.00	87.00	93.00	95.00	98.00	.....	.....	.....	.....	.....	25.37*	30.93*
			92.00	*93.00*	*93.00*	*93.00*	*105.00*	*105.00*	*105.00*	.....	.....	.....	.....
Dallas	†† 70.00	79.00	76.00	66.00	66.00	64.00	117.00	.....	.....	96.00	117.00	18.72	22.80
Denver	* Not in stock		*101.00*	*101.00*	*101.00*	*102.00*	*122.00*	*138.00*	*140.00*	.....	.....	13.92	16.98
Detroit	† 110.00	115.00	100.00	110.00	113.00	115.00	.....	.....	.....	.....	.....	25.00*	30.48*
	91.50	*93.50*	*93.50*	*94.50*	*88.25*	*88.00*	*108.50*	*118.00*	*118.00*	.....	.....	.....	.....
Kansas City	* 107.50	107.50	102.50	105.00	108.00	.....	.....	.....	.....	.....	.....	16.56	20.16
	105.00	*105.00*	*105.00*	*105.00*	*105.00*	*107.50*	*130.00*	*132.50*	*132.50*	.....	.....	.....	.....
Los Angeles	‡ *82.00*	*88.00*	*82.00*	*82.00*	*82.00*	*82.00*	*110.00*	*115.00*	*110.00*	.....	.....	16.61*al	20.25*ab
Minneapolis	# *135.00*	*135.00*	*135.00*	*135.00*	*135.00*	*135.00*	*158.00*	*158.00*	*158.00*	.....	.....	19.89*	24.25*
Montreal	ab90.00	92.00	92.00	92.00	102.00	.....	.....	.....	.....	.....	.....	.....	.....
	165.00	*165.00*	*165.00*	*165.00*	*165.00*	*165.00*	*165.00*	*165.00*	*165.00*	.....	.....	.....	.....
New Orleans	† 100.00	100.00	92.50	85.00	90.00	94.00	118.00	.....	.....	150.00	148.00	18.72	22.80
	† *92.00*	*96.00*	*108.50*	*108.50*	*108.50*	*102.50*	*102.50*	*112.50*	*108.50*	.....	.....	.....	.....
New York	‡ 107.50	110.00	115/120	120/125	120/125	125/130	155/165	.....	.....	220/250	220/250	25.92*	31.60*
	.....	.....	*Range from $120.00 to $135.00*				*135/150*	*149/169*	*149/169*	.....	.....	.....	.....
New York	** 85.00	90.00	75.00	88.00	90.00	92.00	125.00	.....	.....	190.00	190.00	.....	.....
	88.00	*88.00*	*91.00*	*92.00*	*92.00*	*92.00*	*100.00*	*105.00*	*105.00*	.....	.....	.....	.....
Philadelphia	‡		**Range from $110.00 to $127.00**				110/127	.....	.....	210/220	210/220	25.92*	31.60*
			Range from $120.00 to $150.00				*130/140*	*150.00*	*150.00*	.....	.....	.....	.....
Pittsburgh	†		**Range from $90.00 to $95.00**				110/120	.....	.....	110/120	115/125	25.92*	31.60*
			Range from $110.00 to $120.00				*130/140*	*140/158*	*140/158*	.....	.....	.....	.....
St. Louis	fc110.00e	112.00e	98.00f	105.00d	114.00e	115.00e	.....	.....	.....	.....	.....	18.72	22.80
	.....	.....	*108.00f*	*114.00e*	*114.00e*	*115.00e*	*159.00e*	*169.00*	*177.00*	.....	.....	.....	.....
San Francisco	A† 51.00	53.00	53.00	53.00	53.00	57.00	57.00	57.00	57.00	.....	.....	12.23*a	14.91*a
Seattle	† 75.00	75.00	75.00	75.00	75.00	75.00	85.00	85.00	85.00	.....	.....	.....	.....

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd.

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* *a* Spruce *b* Tax exempt. *c* 5M lots. *d* 8–12 ft. lengths. *e* 8–16 ft. lengths. *g* No. 1 common. *i* 8 ft. lengths. *k* No. 3 common. *n* ¼ #1, ¼ #2 & ¼ #3.

A Rail freight rate from Northwest mills to San Francisco are $11.50 to $15.00 per M ft bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures.

PLYWOOD: Plyform grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ½", $152.00; on ¾", $173.00. Exterior plyform ¾" $171.00, ¾" $194.00. For other centers add rail freight increment from table on proper size Oiling and edge sealing charges included. *a* Lower rate by water shipment *b* 50,000 lb. minimum.

* Incl. new freight rates. Rates for other cities not avail. as we go to press.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS — Discounts from jobbers list, Feb. 1, 1950a Single or Double Thickness		EXPLOSIVES — Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*	
	A quality	B quality		
Atlanta	79%	80%	$0.2365	
Baltimore	76%d	78%d	.2365	
Birmingham	83%	83%	.1840	
Boston	77–10%	77–10%	.2365	
Chicago	76%	76%	.2365	
Cincinnati	78%	78%	.2365	
Cleveland	76–10–10%	76–10–10%	.2765	
Dallas	75%	75%	.2440	
Denver	79%	79%	.2415	
Detroit	78–10–10%	78–10–10%	.2365	
Kansas City	80–10%	80–10%	.2415	
Los Angeles	73%	78%	.2390	
Minneapolis	75–10%	75–10%	.2415	
Montreal	40–5%bc	40–10–5%b	21.35h	
New Orleans	78%	77%	.2415	
New York	80–10%	80–10%	.3975g	
Philadelphia	78%	80%	.2365	
Pittsburgh	82%	82%	.2090	
St. Louis	80–10%	80–10%	.2415	
San Francisco	70%	70%	.2365	
Seattle	73%	76%	.2390	

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40%

Glass: *a* Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b* Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. *c* Single thickness. *d* Discount 6/15/52.

Explosives: * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g* In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. *h* F.o.b. Beloeil (near Montreal), per 100 lb. forcite, 40%. Forcite 60%, $23.15.

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.184	$0.2165	$0.2365
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.189 – .1965	.2215– .229	.2415– .249
Rocky Mtn. States	.189 – .2015	.2215– .229	.2415– .254
Pacific N. W. States	.1865–.199	.219 – .2315	.239 – .2515
Pacific S. W. States	.184 – .1915	.2165– .219	.2365– .2415

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail — Pine*	By Rail — Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	....
12-in.— 2-ft. from butt	6-in.	50 to 59-ft.	.54	....
12-in.— 2-ft. from butt	6-in.	60 to 69-ft.	.58	....
12-in.— 2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in.— 3-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in.— 2-ft. from butt	6-in.	50 to 69-ft.	.50/.68	....
14-in.— 2-ft. from butt	6-in.	70 to 79-ft.	.78/.83	.93
14-in.— 2-ft. from butt	5-in.	80 to 85-ft.	.83/.93	.94
14-in.— 2-ft. from butt	5-in.	85 to 89-ft.	....	1.00
14-in.— 2-ft. from butt	5-in.	90 to 100-ft.	....	1.02

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston	Oak	....	....	....	....
	Pine	....	....	....	....
New York	S. L. Sap Pine	$2.55	$4.35	$3.45	$5.45
	Mixed Oak	3.10	4.65	3.70	5.95
Birmingham	Hardwood	2.40	3.88a	2.85	4.58a
Chicago	Red Oak	....	3.40a	....	4.30/4.40a
Los Angeles	Douglas Fir	....	....	....	....
	Redwood	....	....	....	....
Philadelphia	Red Oak	2.55	3.90	3.45	5.10
St. Louis	White Oak	3.10	....	3.90	....
	Red Oak	3.00	3.75a	3.70	4.60a
	Sap Pine or Cypress	....	3.55a	....	4.50a
San Francisco	Douglas Fir	2.15e	3.15ef	2.90bf	4.25eaf
Montreal	Birch or Maple	....h	....h	....h	....h

Tr.— Treated; Untr.— Untreated. *a* Creosoted. *b* 7" x 9" x 8'. *e* Empty cell. *e* Green. *f* F.o.b. cars. *h* No constant price available. *i* Not available.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.0825
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	27.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb	2.30
Soda ash, 58%, in paper bags, per 100 lb. dense	1.75
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.85
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	10.35

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE — PARTITION — SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK — Per M. in quantity Common backing	Straight hard	LIME — Per ton, In paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized, or lump
Atlanta	$195.00	$207.00	$247.00	$327.00	$342.00	$381.50	$27.38	$27.38	$19.00	$17.50	$.....
Baltimore	186.00	198.35	372.00	421.50	549.00	627.00	36.00‡	41.00‡	32.00	21.50	.....
Birmingham	126.00p	136.00p	.....	284.00p	.....	.....	23.50ff	28.00gg	29.25	17.30	.....
Boston	196.00†	209.00†	392.00†	383.25†	.....	.....	36.85p	39.85p	30.00†	28.00†	.....
Chicago	135.00	145.00	280.00	.....	.....	.....	26.00	28.00	30.80	26.00	.....
Cincinnati	185.00f	195.00f	340.00fdd	.....	.....	.....	45.00f	46.00f	26.00f	26.00f	.....
Cleveland	170.00**	181.00**	.....	.....	.....	.....	34.50	34.50	28.25	23.25	32.00ee
Dallas	.....	118.00	.....	.....	.....	.....	19.75	35.25	32.00	21.80	.....
Denver	.....	.....	.....	.....	.....	.....	34.00	41.00	34.80bb	28.00bb	34.00bb
Detroit	130.00	138.00	259.00	.....	317.25	362.60	37.25cc	35.60cc	33.50	29.50	.....
Kansas City	127.50	147.50	270.00	270.00	340.00	400.00	28.50	.....	32.00	26.00	28.50
Los Angeles	r	r	r	r	r	r	27.50§	.....	34.00	34.00	35.00
Minneapolis	175.00p	196.00p	407.00p	196.00wp	.....	.....	35.00ep	45.00	39.00bbe	29.00bbe	41.00bbde
Montreal	165.00ag	181.00au	325.00au	230.00	248.00	.....	38.50	48.00	34.80	32.50	26.00u
New Orleans	170.00	170.00	310.00	380.00	.....	.....	31.00	.....	.....	28.00	28.00
New York	140.95h	150.30h	266.70eh	225.50hn	.....	.....	37.00	.....	36.00	32.00	.....
Philadelphia	145.30	155.00	290.60	348.70	.....	.....	30/34	35/42	25.00	23.00	2.97
Pittsburgh	112.00	117.00	189.00	216.00	279.00	317.00	36.00	46.00y	25.00	23.00	2.97m
St. Louis	142.00ee	160.00ee	319.00ee	465.00ee	439.00	621.50	40.00sl	36.00s	.90aaa	.75aaa	1.25aaspss
San Francisco	156.85a*	177.10a*	235.30dda*	.....	.....	.....	37.00	.....	26.60	26.60	2.65m
Seattle	223.00ee	230.00ee	.....	240.00eew	.....	.....	34.00s	49.00s	42.00ahh	37.50ff	3.90mhh

† F.o.b. yard Roxbury. a Smooth. b Per 50 lb. bags. c 6 x 12 x 12 in.-3 cell. d Pulverized hot. e 5%, 10th following month. g 5½ x 8 x 12. h F.o.b. trucks, job site N.Y.C. j Truck load or over. k $1.00 discount l Red face. m Per bbl., 180 lb. n 7½ x 7½ x 12. Speed title. p Truck lots. q Provincial and Municipal tax extra. r Not used because of earthquake danger. s 2% discount for cash. t 5½ x 8 x 11½. u Tax exempt. v Sand lime. w 5 x 8 x 12. y Stacked. z Pebble lime price per 80 lb sack. aa Price per sack. Lime not sold per ton. bb LCL. cc Truck delivery. dd 6 x 12 x 12. ee Pebble lime. ff 80% common. gg Select. hh LCL. § F.o.b. yard. ‡ Per ton price, no incr. ** Warehouse delivery. * F.o.b. Stockton.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl. Dry a	WHITE LEAD Per 100 lb. in 100 lb. cases in oil w	READY-MIXED PAINT — Per gal., drums Graphite b	Aluminum c	Ferric Oxide d	ROOFING SUPPLIES Carload lots f.o.b. factory — Rolls, slate surfaced, 85–90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl per ton
Atlanta	$16.25	$28.275	$3.26	$3.51	$3.01	$2.74	$3.01	$2.98	$0.405	$39.75
Baltimore	16.00	27.90	2.75	4.25	3.35	2.66	4.43	4.43	.47	45.56
Birmingham	16.25	28.275	3.90	3.40	....	2.93	2.93	2.93	....	42.00ee
Boston	16.00	27.90	....	...	....	2.98gg	3.03gg	3.03gg	.42g	48.50g
Chicago	16.00	27.90	....	..	....	3.29‡u	3.29‡o	3.29‡o	38.00‡bb	48.00‡
Cincinnati	16.00	27.90	....	....	....	2.735	2.735	2.735	.46y	47.86
Cleveland	16.00	27.90	2.47pgg	2.60gg	2.55gg	2.97q	2.91o	2.91o	.43y	40.70hh
Dallas	16.25	28.65	....	4.05	....	3.50q	3.75o	4.35o	.36	58.50hh
Denver	16.50	28.40	3.29	5.15	3.04	2.66	2.61o	2.61o	.43f	47.00
Detroit	16.00	27.90	2.36	3.25	2.50	2.97	2.85f	2.91	.53	44.00
Kansas City	16.00	28.65	....	2.71ge	2.65	3.40	3.20o	3.20o	.43	53.00
Los Angeles	16.00	28.15	3.30*	4.50*	4.20*	2.63*	1.70ee	l	.58*	l
Minneapolis	16.00	29.88/28.02	....	....	....	2.74ddd	2.74hddd	2.74hddd	.44ddd	42.00r
Montreal	.....	21.15	2.95p///	4.05a///	3.25p///	4.85f	3.65f	3.65f	1.24f	3.78h
New York	16.00	27.90	....	....	....	2.79e	2.74eo	2.74eo	.44ez	42.00e
Philadelphia	16.00	27.90	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	16.00	27.90	2.65	2.85	3.15	2.95	3.10e	3.10e	.35	45.00
St. Louis	16.00	27.90	....	....	....	2.74	2.74h	2.74h	.42y	42.50
San Francisco	16.00	28.15	2.40	....	3.40	2.95	4.00aa	....	.49	....
Seattle	16.00	28.40	3.07m	2.93m	....	3.58mcc	3.05hmcc	....	.59mcc	52.00fmcc

† Delivered. Note: Red lead in oil 50c higher than white lead in oil. a Red lead prices change frequently due to pig lead price changes. b U. S. War Dept. Spec. 3-49A. c ASTM Spec. D266-31. d 80% minimum ferric oxide. e 15 lb. f Per 432 sq. ft. g F.o.b. yard, Roxbury. h Per roll. 65 lb. i Net carload lot prices; Minneapolis and vicinity. j Asphalt pitch. k Per cwt. l Not used. m 1% discount for cash. n F.o.b. city. o Per 60-lb. p 6-drum, 50 gal. ea. q Per 90-lb roll. r F.o.b. factory Chicago. s 466 Med. t Federal tax included. u Per 90 lb. square. v Per ton. w Price to large paint contractors is $1.25 less. x Mineral surfaced. y 55-gallon container z Drums. aa Approximate cost per 100 lbs. bb Roofers coating and cement. Price per ton. cc LCL, truck delivery. dd 2% cash discount. ee Asphalt. in 100 lb. package. ff 5-gal. drums. gg F.o.b. factory. hh Incl. freight. *D. Std Black. E Ready-mixed, F. Over 80% ferric oxide. * Aver. wt. approx. 425 to 550 lbs. drum. g Freight allowed to destination not exceeding .50 cwt.

SKILLED AND COMMON WAGE RATES—PER HOUR

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor — Building	Common Labor — Heavy Const.
Atlanta	$3.10	$2.80	$2.75	$2.80	$2.90	$2.75	$2.90	$1.28	$1.28
Baltimore	3.20d	2.75	3.275f	3.10/3.25	3.075f	2.875	2.975f	1.675f	1.675f
Birmingham	3.15	2.40	2.825h	2.245	2.62	2.875	2.875h	1.30	1.40
Boston	3.185n	2.75	3.15f	3.20	3.20f	3.13d	3.10d	1.99n	1.99n
Chicago	3.40k	3.15n	3.20m	3.00m	3.525n	3.37f	3.24n	2.35h	2.35h
Cincinnati	3.225	2.875	2.99h	2.75/3.00	3.10	3.03hN	3.175h	2.02	2.02
Cleveland	3.25f	3.20f	3.20f	3.20	3.20	3.20	3.20n	2.45	2.45
Dallas	3.80	2.625	2.75	2.75	3.437	2.90	2.90	1.40	1.40
Denver	3.80	2.775	2.75	2.705	3.30	3.00	2.97	1.80	1.80
Detroit	3.33n	3.08n	3.23n	3.23n	3.32f	3.22N	3.15h	2.28n	2.28n
Kansas City	3.625	2.675	2.805	2.64/2.885	3.25	2.987n	3.075h	1.98	1.98
Los Angeles	3.285o	2.70	2.925h	2.57	3.437	3.10	3.225n	2.05	2.05
Minneapolis	3.125	2.70	2.82	2.65	2.90n	3.00n	2.875	1.95	1.95
New Orleans	3.05	2.42	2.80n	2.60	2.825	2.925h	2.75n	1.375	1.375
New York	3.874h	3.43hJ	3.750R	3.69f	4.00A	3.63aaP	3.67hL	2.288P	2.288P
Philadelphia	3.62i	3.10	3.51IM	2.875/3.625	3.55h	3.55n	3.515n	1.875	2.175
Pittsburgh	3.475h	3.20n	3.475h	3.325h	3.30h	3.35	3.00	2.025h	2.025h
St. Louis	3.62c	2.975h	3.025h	3.05	3.25h	3.28c	3.05K	2.005h	2.005h
San Francisco	3.4758k	2.905h	3.075h	2.66	3.45eh	3.225h	3.275K	2.075h	2.075h
Seattle	3.30	2.58	2.78	2.71	3.15	2.925	2.93	2.18	2.21d
Montreal*†	2.00	1.80	1.90	1.70	2.00	1.90	1.90	1.25	1.25

* Cost of living bonus now included in basic wage. ‡ Includes 5¢/hr tool replacement. † Plus 2% vacation pay.

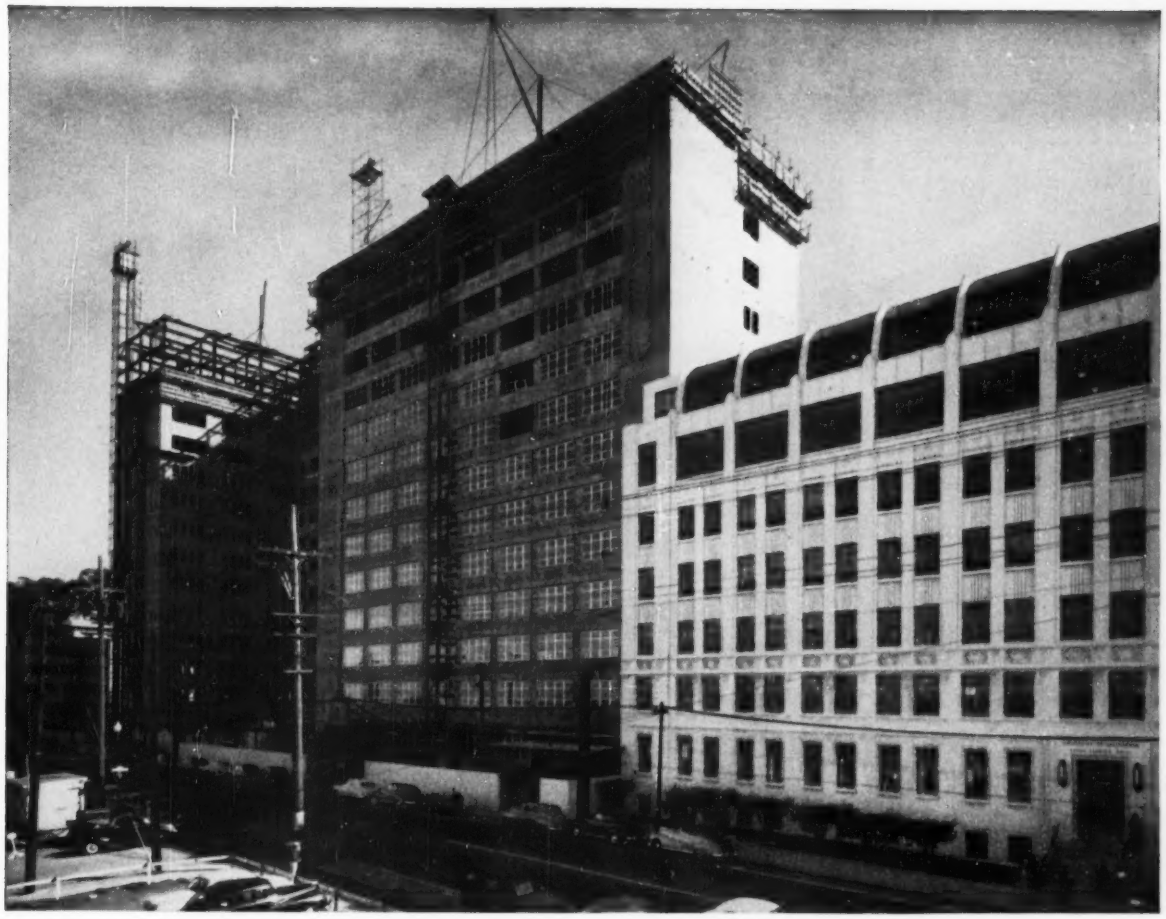
a 6 hr. day. b 7 hr. day. c Incl. 3% vac. stamp fund plus 7¢ WF for bricklayers; 4% VF for electricians plus 8¢ WF, 1% PF. d Incl. 10¢ H&WF. e Incl. 6¢ H&WF. f Incl. 6% WF. g Incl. 11½¢ WF. h $2,625 homes & housing plus 7½¢ WF. i Incl. 12¢ WF and 15¢ PF. j Incl. 10½¢/hr WF. k Incl. 7½¢/hr. WF. l Incl. 4% VF. m Incl. 5¢/hr WF. n Incl. 20¢ H. W. Ins., Vac. & Retirement. o Incl. 10¢ PF, 8¢ WF. p Incl. 3% WF, 3% PF. r Incl. 3½% WF and 20¢ PF. s Incl. 5% W&PF, 4% VF, 1% NC, 6 PH. Incl.7½¢ H&WF. t Incl. 1½% WF. u Incl. 10¢ WF. v Negotiating. x Incl. 8¢ WF. y Incl. t 22½¢ WF. z Incl. 7½¢ IF, 5¢ H&WF. A Incl. 10¢ WF, 10¢ PF & 20¢ B.F. B Incl. 3% WF. C Incl. 2½¢ H&WF. E Plus 5% WF, plus travel pay per day. F Plus $1/per day travel time. G Incl. 11¢ H & WF. H Incl. 7¢ WF. I Incl. 15¢ H&WF. J Incl. 4% WF, 6¢PH. K Incl. 10¢ H&WF 10¢ VF, 2½% PF. L Incl. 3% WF, 3% PF, 1% VF, 1% EF. M Incl. 7½¢ PF. N Incl 1% WF O Incl 2% WF, 1% PF, P Incl 3% WF incr. to 4% 8/53.

MEXICO CITY PRICES

In Pesos, F.o.b. City		Oct.'53	Nov.'53
Common Wages—Building (8 hr. day) (Peons)	av. per hr.	.84	.84
Common Wages—Heavy Const. (8 hr. day) (Peons)	av. per hr.	.84	.84
Skilled Labor Wages			
Carpenters (8 hr. day) 1 cl.	av. per hr.	1.88	1.88
Bricklayers (8 hr. day) 1 cl.	av. per hr.	1.88	1.88
Struct. Iron Workers (8 hr. day) ....Remachadores.	av. per hr.	1.13*	1.13*
Struct. Steel Shapes 3"-15" x 12 meters	per metric ton	1224.23	1224.23
Reinf. Steel, Corr. Rods			
⅜" x 11 meters	per ton	1250.00	1250.00
½" x 11 meters	per ton	1240.00	1240.00
⅝" x 11 meters	per ton	1230.00	1230.00
¾" x 11 meters	per ton	1220.00	1220.00
⅞" x 11 meters	per ton	1220.00	1220.00
1" x 11 meters	per ton	1220.00	1220.00
Gravel truck load of 3½ cu. meters			
Blue Gravel	per tr. load	60.00	60.00
Rose Gravel	per tr. load	55.00	55.00
Cement, Std. Port. (Tolteca)	per ton	160.00	160.00
Lumber			
Mex. Sacred Fir (OYAMEL)	per M ft.	750.00	750.00
1st Class Pine	per M ft.	1350.00	1350.00
2nd Class Pine	per M ft.	1100.00	1100.00

* 1st & 2nd fl. add 40% ea. addn'l floor over preceding one

ENR Skilled Average: (Bricklayers, Carpenters, Iron workers): $3.086 **ENR Common Average:** $1.933†
† Nov. Revised $1.933.



The Medical Sciences Building at San Francisco as it neared completion, with some unenclosed steelwork still visible at upper left. The adjoining building at right is the Medical Center hospital.

14-Story Medical Building Erected Without Riveting

Construction of the new Medical Sciences Building, teaching unit at the University of California Medical Center in the Sunset district of San Francisco, posed a special problem. For right at the edge of the site were hundreds of hospital patients for whom the clattering of riveting hammers for hours every day would be an ordeal.

To spare the patients, the building's architects, Blanchard and Meyer, called for erection of the steelwork with bolts, and Bethlehem Pacific, West Coast subsidiary of Bethlehem Steel, set in place the 2,000 tons of columns and girders without the rat-tat-tat that commonly signalizes steel going up.

The job required over 70,000 bolts. Some of them came from Bethlehem Pacific plants on the Coast, while others were special high-strength bolts from Bethlehem Steel's plant at Lebanon, Pa.

The Medical Sciences Building is one of the first buildings of this size to have a bolted steel frame. Now the practice of erecting steel structures with bolts is spreading. Buildings with bolted connections are going up in all parts of the country, with resulting saving in time and elimination of riveting noise.

Man at left is not riveting, but tightening nuts on bolts with power-driven wrench. Rivets in lower part of picture had been driven previously, in the shop.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

The SPEEDIEST, most RELIABLE detector for automatic fire alarm systems is DETECT-A-FIRE®

1. IN MODERN COLLEGE PLANNING IT IS WISE to take the fullest possible precautions against fire — not merely to save valuable buildings and university records but basically to protect the lives of students and faculty. DETECT-A-FIRE thermostats are recommended as the speediest, most reliable detectors for automatic fire alarm systems.

2. THIS TRAGIC CLASSROOM FIRE could have been avoided had an adequate fire protection system been in operation. DETECT-A-FIRE units actuate the alarm the *instant* surrounding air temperature reaches a danger level. Due to an entirely new principle of operation, this unique thermostat completely protects against alarm delay and false alarms.

3. THE STAINLESS STEEL SHELL ITSELF is the sensitive, actuating element. Hermetically sealed and corrosion resistant, DETECT-A-FIRE thermostats more than pay for themselves in dependable, long-lived, trouble-free performance. With this intrinsic economy and dependability it is more than worthwhile for you to specify them. They are installed by all the leading manufacturers of alarm and release systems. Listed by Ⓤ . . . approved by ⓕ.

4. THE FREE BULLETINS above contain complete details on Fenwal DETECT-A-FIRE thermostats — the only units bringing you the benefits of Rate-Compensation Actuation, a new principle of fire detection. Fenwal engineers will gladly work with your system installer so that you will enjoy the advantages of *full* fire protection and *long term* economy. Write **Fenwal Incorporated, 2612 Pleasant Street, Ashland, Mass.**

Fenwal

DETECT-A-FIRE®

Thermostats

DYNAMIC, RATE-COMPENSATION ACTUATED FIRE DETECTORS

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
December 22 Massachusetts

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **B & Z Construction Corp.,** c/o Max Brown, 498 Main St., East Hartford, Conn., Owner Builds, **$2,250,000** single RESIDENCES, Oakland Hills, Road Ave., WINDSOR, CONN.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
December 21, 22 Pennsylvania
STREETS AND ROADS
December 21 New Jersey December 21, 22 Pennsylvania

▲† **N. Y., Niagara Falls**—HANGAR, etc.—B.A. 1/6—U. S. Eng., 80 Lafayette St., New York, Zone 13, maintenance hangar, administration and training bldg., aircraft maintenance and parking apron with connecting taxiway for AFRTC at Niagara Falls Air Force Base, serial No. Eng-30-075-54-130. $2,600,000. Plans deposit $35. CD 2/18, under LB.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW JERSEY**—New Jersey Turnpike Auth., Administration Bldg., New Brunswick,
Dravo Corp., Neville Island, Pittsburgh, Pa., LB, **$3,934,250,** Contract N-1 main span piers and 15 east approach piers for Newark Bay Bridge on Newark Bay-Hudson County extension of N. J. Turnpike, Hudson Co.;
Merritt-Champan & Scott Corp., 260 Madison Ave., New York, N. Y., LB, **$1,876,600,** Contract N-3, 41 piers for westerly approach to Newark Bay Bridge on Newark Bay-Hudson County extension of N. J. Turnpike; LB **$879,540,** Contract N4 east abutment and 16 approach piers for Newark Bay Bridge on Newark Bay-Hudson County extension of N. J. Turnpike, Jersey City, Hudson Co. Bid Nov. 24. CD 10/20.

▲ **NEW JERSEY**—New Jersey Hy. Auth., State Hy Office Bldg., 1035 Parkway Ave., Trenton,
Frank Stamato & Co., 284 Main St., Lodi, N. J., CA, **$3,589,279** Contract 22, grading, drainage, paving, structures 3.3 mi. Garden State Parkway from Belleville Ave. to 1,200 ft. south of Passaic Co. line, Bloomfield and Nutley, Essex Co. Bids Sept. 28. CD 10/9, under LB.

▲ **NEW JERSEY**—New Jersey Hy. Auth., State Hy. Office Bldg., 1035 Parkway Ave., Trenton,
S. J. Groves & Sons Co., P. O. Box 185, Woodbridge, N. J., CA, **$7,777,777,** Contracts 28 and 31, grading, drainage, structures, paving 11.2 mi. Garden State Parkway from White Horse Pike to Beesley's Point Bridge, Egg Harbor and Galloway Twps., Atlantic Co., Bids Oct. 14, CD 10/15, under LB;
Peter W. Kero, Inc., 615 North Ave., Lyndhurst, N. J., CA, **$2,825,254,** Contract 63, grading, drainage, paving 1.3 mi. Garden State Parkway from Rodwell Ave. to D.L. & W.R.R. Newark and East Orange, Essex Co., Bids Oct. 9, CD 10/14, under LB.

▲ **NEW JERSEY**—New Jersey Hy. Auth., State Hy. Dpt. Office Bldg., 1035 Parkway Ave., Trenton,
George M. Brewster & Sons, Inc., 275 W. Fort Lee Rd., Bogota, N. J., CA, **$4,852,859,** Contracts 12, 13 and 29 grading, drainage, paving 22.7 mi. southbound roadway of Garden State Parkway between Cape May and Beesley's Point, Cape May Co. Bids Oct. 15. CD 10/21, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Caristo Constr. Co.,** 26 Court St., Brooklyn 2, N. Y. LB **$1,814,000.** JUNIOR HIGH SCHOOL 158, Oceana St. between 46 and 47 Aves., BAYSIDE, N. Y. Bd. Educ., 49 Flatbush Ave. exten., Brooklyn 1, N. Y. Bids Nov. 25.

▲ **Parkdale Estates Homes,** c/o Alwin Cassens, Jr., archt., 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. **$1,600,000,** 124 HOUSES, 33-acre tract on Carman Rd. between Great Neck Rd. Southern Parkway, FARMINGDALE, N. Y.

▲ **Caristo Constr. Corp.,** 26 Court St., Brooklyn 2, N. Y. CA **$2,125,000.** JUNIOR HIGH SCHOOL 135, Wallace, Mace, Holland and Waring Aves., NEW YORK, N. Y. Bd. Educ., Flatbush Ave. exten., Brooklyn 1, N. Y. Bids Nov. 19. CD 11/24, under LB.

▲ **Samuel Rudin,** 36 W. 44 St., New York 36, N. Y. Owner Builds. **$2,000,000.** 19 story APARTMENT, Park Ave. and 36 St. to be known as 30 Park Ave., NEW YORK, N. Y. Emery Roth & Sons, 575 Madison Ave., New York 21, N. Y., archts.

▲ **Walter Kidde Constructors, Inc.,** 140 Cedar St., New York, N. Y., CA **$4,104,000.** general contract; **Schacht Steel Constr., Inc.,** 1841 Broadway, New York, 23, N. Y., CA, **$971,000** welded alternate, structural steel and misc. iron;
James H. Merritt & Co., 11-1134 Ave., Long Island City, N. Y., CA **$679,976** plumbing;
August Arace & Son, Inc., 624 3 Ave., Elizabeth, N. J. CA, **$1,269,283,** heating, ventilation, air conditioning;
Beach Electric Co., Inc., 18 Springdale Ave., East Orange, N. J., CA **$727,787,** electrical work;
Watson Electric Co., Inc., 407 W. 36 St., New York, N. Y. CA **$522,860** elevators for 17 story HOSPITAL, NEWARK, N. J. Dpt. P. Affairs, City Hall, Newark, N. J. Grand total $8,275,599. Bids Oct. 6. CD 10/9, under LB.

▲ **Ferber Co.,** Ackerman Ave. and Belair Rd., Hackensack, N. J., CA, **$3,500,000.** 150,000 sq. ft. PLANT to construct liquid fuel rocket engines for Navy Dpt., ROCKAWAY, N. J. Reaction Motors, Inc., Elm St. and Stickel Ave., Rockaway, N. J.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
December 15 South Carolina December 17 Virginia
STREETS AND ROADS
December 15 South Carolina December 17 Virginia

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Cecil's, Inc.,** P.O. Box 1895, Spartanburg, S. C. CA Est. **$2,250,000.** PLANT, NORTH CHARLESTON, S. C. Bird & Son, Inc., 47 Wilson St., East Walpole, Mass. CD 9/9.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
December 15 Illinois December 15, 16 Michigan
STREETS AND ROADS
December 15 Illinois December 15, 16 Michigan
December 22 Indiana

BIDS ASKED—BUILDINGS

▲ **Mich., River Rouge**—POWER PLANT—Bids Asked—Detroit Edison Co., 2000 Second St., Detroit, Zone 26, substructure for proposed power generating plant, River Rouge Station.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—Ohio Turnpike Comn., 139 E. Gay St., Columbus,
Winston Bros. Co., Northwestern Bank Bldg., Minneapolis, Minn., CA **$6,535,192,** Constr. Sect. 41, grading, drainage structures, paving approx. 3.9 mi. from point approx. 200 ft. east of Portage River in Ottawa Co. and extending eastwardly to approx. 200 ft. west of Hessville Rd. in Sandusky Co., incl. four single bridges, four twin bridges one rein.-con. culvert for drainage, all bridges are steel beam bridges; Constr. Sect. 42, grading, drainage, structures, paving approx. 5.1 mi. from point approx. 800 ft. west of Camper Rd. in Ottawa Co. and extending eastwardly to approx. 200 ft. east of Portage River in Ottawa Co. incl. four single bridges, four twin bridges, one rein.-con. culvert for drainage, all bridges are steel beam bridges, Ottawa and Sandusky Counties. Bids Dec. 1. CD 10/30.

▲ **OHIO**—Ohio Turnpike Comn., 139 E. Gay St., Columbus,
Bero Eng. & Constr. Corp., McKinley Bldg., Buffalo, N. Y. CA **$9,388,659,** (Nov. 30, 1954 completion), grading, drainage, structures and paving approx. 3.7 mi. and constr. three single bridges of five spans each, three twin bridges of three spans each, six rein.-con. culverts for drainage and one rein.-con. retaining wall, Sect. 4; grading, drainage, structures, paving, approx. 5.3 mi., constr. three single steel beam bridges, three twin steel beam bridges, one single steel girder bridge one twin steel girder bridge and seven rein.-con. box culverts for drainage, three bridges are from three to six spans each, Mahoning Co. Bids Nov. 19. CD 11/24, under LB.

▲ **OHIO**—Ohio Turnpike Comn., 139 E. Gay St., Columbus,
Peter Kiewit Sons Co., 1024 Omaha Natl. Bank Bldg., and **Condon-Cunningham Co.,** 4229 Lafayette St., Omaha,, Neb., CA **$6,277,853.** Constrs. C-39 and 40, grading, drainage, structures and paving approx. 8 mi. Turnpike, Sandusky Co. Bids Nov. 19. CD 11/24 under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Holmes Constr. Co.,** Wooster, O. CA. Est. **$2,200,000.** L-shaped, 17,000 sq. ft. iron powder PLANT, EAST TOLEDO, O. Republic Steel Corp., Republic Bldg., Cleveland 15, O. R. H. Bahney, c/o owner, ch. engr. CD 7/2.

▲ **Preston Management Co.,** 1101 Theodore St., Joliet, Ill., Own Forces. **$5,000,000,** 500 HOMES, along Hy. 66, south of JOLIET, ILL.

▲ **Bryant & Detwiler Co.,** 2304 Penobscot Bldg., Detroit, Mich. CA est. **$14,000,000.** 12 story, brick, steel, concrete 640,000 sq. ft. ADMINISTRATION BLDG., Michigan and Southfield Rds., DEARBORN, MICH. Ford Motor Co., 3000 Schaefer St., Dearborn, Mich. Skidmore, Owings & Merrill, 575 Madison Ave., New York, N. Y., archts. CD 3/25.

▲ **Ross-Hill Realty, Inc., Agent,** 13324 West Seven Mile Rd., Detroit, Mich. Owner Builds. Est. **$2,200,000.** 200 single brick ranch HOMES, Hemmingway, Middlebelt and Joy Sts. area, REDFORD, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
December 15 Iowa
STREETS AND ROADS
December 15 Iowa December 18 Minnesota

▲ **Texas**—GAS LINES, etc—Bids Asked—Texas Eastern Transmission Corp., Texas Eastern Bldg., Shreveport, La., 17 mi. gas lines, near Columbus, Colorado and Jefferson Counties, $875,000, CD 11/27; compressor station, near Shelbyville, Shelby Co., $1,250,000, CD 7/30.

BIDS ASKED—BUILDINGS

▲ **Mo., Kansas City**—AUDITORIUM—B.A. 12/22—City, c/o Reed McKinley, dir. P. Wks. Office, City Hall, municipal auditorium underground parking facility and plaza. $3,600,000. Extended date. Gentry & Voskamp, 4 W. 13 St., Kansas City, Mo., archts. CD 7/29.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Pasotex Pipe Line Co.,** Womble Blvd., El Paso, Tex. Own Forces. Approx. **$2,875,000,** 150 mi. 10 in. welded joint crude oil line from near Snyder to near Wink; **$395,000,** compressor station, Snyder; **$350,000,** compressor station, near Wink; **$315,000,** compressor station, near Midland, TEXAS. Grand total $3,935,000. CD 9/11.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Robert E. McKee, General Contractor, Inc., Box 2848,** Dallas, Tex., LB **$1,454,000.** Public LIBRARY, DALLAS, TEX. City, City Hall, Main and Harwood Sts., Dallas, Tex. Bids Nov. 23. CD 11/4.

▲ **W. S. Bellows Constr.,** 716 N. Everton St. Houston, Tex., CA **$1,120,000.** 5 story, bsmnt. OFFICE, HOUSTON, TEX. Wilson-Brazoria Corp., 1200 Bissonet St., Houston, Tex. CD 9/8, under LB.

FAR WEST

BIDS ASKED—BUILDINGS

▲ **Calif., San Francisco**—HOUSING—B.A. 1/5—San Francisco Housing Auth., 440 Turk St., low rent housing Cal 1-18, Site 2, Western Addition Housing, $8,000,000. Plans deposit $100. Spencer & Ambrose, 251 Kearny St., archts. CD 12/13/51.

▲ **Calif., Los Angeles**—HOUSING—B.A. 1/12—Housing Auth. of City of Los Angeles, 1401 East First St. Zone 33, Part 2, 533 dwelling unit increment Jordan Downs Reconstruction, Proj. No. Cal. 4-16 between 97 and 103 Sts., at Grape St. James R. Friend, A.I.A., 556 W. Fifth St., San Pedro, archt., adv. ENR 12/10. CD 9/18/50.

▲ **Calif., Redwood City**—HOSPITAL—B.A. 1/19—San Mateo Co., Court House, Redwood City, community hospital addn., $2,300,000. Plans deposit $150. Stone & Mulloy, S. P. Marraccini, 619 California St., San Francisco, archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacramento,**
Ukropina-Polich-Kral and John R. Ukropina, P.O. Box 105, San Gabriel, Calif., CA, **$715,859,** grading, surf. 9.1 mi. between Oroville Wye and Jct. 87 north of Oroville, Butter Co.;
Dan Caputo, 2711 Moorpark Ave., San Jose, Calif., CA, **$1,099,103,** grading, surf. steel bridge 2.1 mi. between Antoch Bridge and Emmaton's Landing, Sacramento Co. Bids Nov. 12. CD 11/20, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,
A. Teichert & Son, Inc., P.O. Box 297, Baldwin Park, Calif., CA, **$1,193,467,** grading, surf., bridges 12.3 mi. across Arroyo Sequit, between Little Sycamore Creek and Escondido Canyon, Ventura and Los Angeles Counties. Bids Nov. 5, awarded Nov. 20. CD 11/20, under LB.

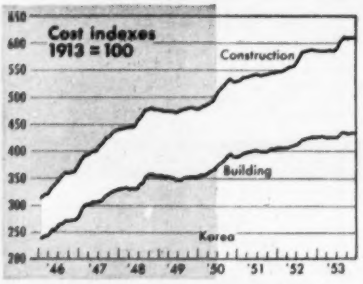
BUILDINGS

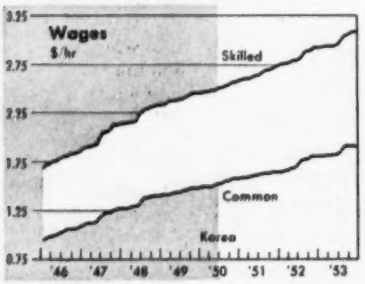
LOW BIDS AND CONTRACTS

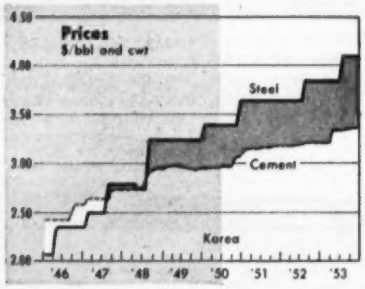
▲ **Stolte, Inc.,** 8451 San Leandro St., Oakland, Calif., LB, **$3,209,800,** complete job;
R. Pederson & Sons, 44 Clark St., Fresno, Calif., LB, **$1,921,490,** general contract, 14 WARD BUILDINGS at Porterville State Hospital, Phases 3 and 4, PORTERVILLE, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Nov. 24. CD 10/16.

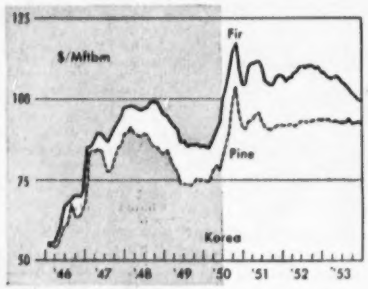
(Proposal Advertisement see pp. 147 to 150)

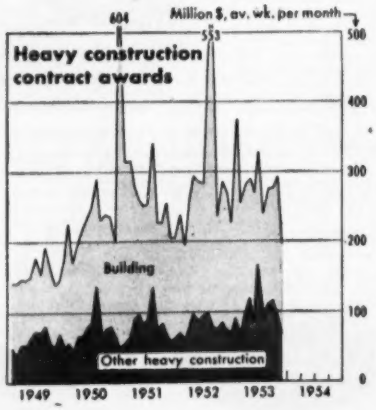
DECEMBER CONSTRUCTION SCOREBOARD











ENR INDEXES (1913 = 100), 20-cities' average	1953 Dec.	% Change from last Month	% Change from last Year
Construction Cost*	611.48	−0.07	+4.0
Building Cost	435.90	−0.1	+2.6

*Revised: Nov. '53 611.92; Dec. '52 588.09

WAGE RATES, 20-cities' average			
Common**	$1.933	0.0	+6.2
Skilled (aver. 3 trades)	3.086	0.0	+5.1
Bricklayers	3.364	0.0	+3.1
Structural Ironworkers	3.055	0.0	+6.7
Carpenters	2.840	0.0	+5.7

** Revised: Nov. '53 1.933; Dec. '52 1.820

MATERIAL PRICES, 20-cities' average			
Cement, bulk, per bbl	$3.365	+0.2	+4.5
Structural Steel, (3-mill aver.), per cwt	4.100	0.0	+6.5
Sand, per ton	2.189	+0.09	+3.8
Lumber, 2x4 Fir, per M. ft. bm	99.208	−0.7	−7.9
Lumber, 2x4 Pine, per M. ft. bm	91.317	−0.2	−1.8
Common brick, per M	32.911	0.0	+4.1
Ready-mixed concrete, per c. y	11.979	+0.1	+5.4
Structural Clay Tile, 3x12x12 per M	159.741	−0.07	+3.8

CONTRACTS AWARDED (Millions)	1953 Nov.	1953 11-Mos.	% Change from '52 Nov.	% Change from '52 11-Mos.
Total U. S. (ENR reported)	$794.3	$13,659.9	−26.4	−7.6
Private	405.0	7,735.9	−39.0	+17.5
Public	389.3	5,924.0	−6.4	−27.8
Federal	74.9	1,341.2	−50.5	−69.3
ENR Volume Index, '13 = 100	354	503	−29.8	−14.9

NEW CAPITAL (Millions)				
Total	612.6	10,676.3	+79.8	−28.7
State & Municipal Bond Sales	440.9	4,306.8	+129.9	+39.5
Corporate Security Sales	165.2	3,895.5	+22.9	+13.9
Federal (non-federal work)	6.5	878.4	−55.2	−0.6
Federal (federal work)	———	1,595.6	———	−78.9

MATERIAL SHIPMENTS & LABOR SUPPLIES (Millions)	1953 Sept. (S) Oct. (O)	1953 9-Mos. 10-Mos.	% Change from '52 Mo.	% Change from '52 Yr.-Cum.
Cement bbls, Bu. of Mines	27.417(S)	199.692(9)	+4.5	+4.9
Fabr. Struc. Steel, tons AISC	.290(O)	2.587(10)	+10.3	+16.8
Lumber, mil. ft. bm., NLMA	3.207(S)	29.312(9)	−9.0	+4.1
Lumber Prod., mil. ft. bm., NLMA	3.470(S)	29.607(9)	−1.8	+4.6
Contract Constr. Employ., BLS	2.705(O)	2.517(10)†	−0.8	−1.9

† Average

ENR CONSTRUCTION & BUILDING COST INDEXES IN 21 CITIES (1913 = 100)

	Construction cost Dec. '53	Construction cost Sept. '53	Building cost Dec. '53	Building cost Sept. '53		Construction cost Dec. '53	Construction cost Sept. '53	Building cost Dec. '53	Building cost Sept. '53
Atlanta	460	460	394	394	Los Angeles	626	627	419	420
Baltimore	553	551	428	427	Minneapolis	661	661	468	468
Birmingham	465	469	386	390	Montreal	550	550	430	430
Boston	624	626	433	433	New Orleans	502	506	416	419
Chicago	690	691	443	443	New York	713	713*	507	505
Cincinnati	631	633	434	435	Philadelphia	666	666	494	494
Cleveland	708	709	438	439	Pittsburgh	640	640	466	460
Dallas	482	470	405	397	St. Louis	654	653	455	457
Denver	595	604	441	449	San Francisco	600	587	400	397
Detroit	685	690	448	453	Seattle	643	636	402	402
Kansas City	630	630	442	442					

*Revised

For quarterly indexes Sept. '48 to Sept. '53 see October 8, 1953 ENR, page 93.

November awards are down: Private work is off most

After setting new records for September and October, heavy construction contracts slackened sharply in November. Awards reported by ENGINEERING NEWS-RECORD and the CONSTRUCTION DAILY totaled $794 million. That's the smallest November total since 1949. It's 26% less than in November of last year, which was a big month for contract awards.

Compared with October of this year, November volume was off 32%, averaging $199 million per week during the four weeks of the month compared with $294 million weekly during the five weeks of October.

The big drop in November came in private work. It was off 41% from October, and down 39% from a year ago. This was the smallest month so far in 1953 for private awards. However, for the first 11 months, private construction contracts are 18% of 1952.

There were smaller percentage declines in state and municipal awards and in federal contracts. State and municipal work totaled $314 million—smallest month since February. It was off 21% compared with October, although it was 19% above November 1952. Federal contracts hit a new low for the year—$75 million. They were 16% below October and 51% below November 1952.

For the first 11 months of this year, state and municipal volume is 20% ahead of last year. The 8% decline in total volume of contract awards for this year so far is due entirely to a 69% drop in federal contracts.

• **Private work**—Here are the details on private awards.

The biggest drop was in the important industrial category, which fell 55% below October's high volume. November volume was $148 million, the smallest since July. Compared with November of last year, industrial awards were off 35%.

Private mass housing (see chart, page 26) slid downhill again this month to average $43.6 million per week. This was the second lowest month in 1953—only July was lower. It was also 29% below November 1952, volume.

Commercial volume held up best among the different types of private work. But even here awards were off 20% from October, down 59% from November of last year (which was the top month for 1952).

• **Public work**—All types declined in November, except earthwork & waterways and public housing.

Highway volume declined for the second straight month, averaging $26 million per week during November. But it was 73% above November of last year.

Bridge awards fell sharply last month—47% below the record high of October, and 28% below a year ago.

Waterworks and sewerage held about even with October, though both types were lower than a year ago.

Public building, excluding housing, was down 21% from October, and 15% from November 1952.

• **Regions**—New England was the only region where November awards were ahead of October. Elsewhere, declines ranged from 7% in the South to 60% in the Far West.

The Middle Atlantic is the only region where 1953 volume so far is higher than in 1952. While total contract awards are lower than last year in the other regions, most of the drop has been in federal work.

Private awards are above last year in every region except the South and the West of Mississippi area. State and municipal work is down in New England and in the West of Mississippi region. Federal work is lower in every region than it was last year.

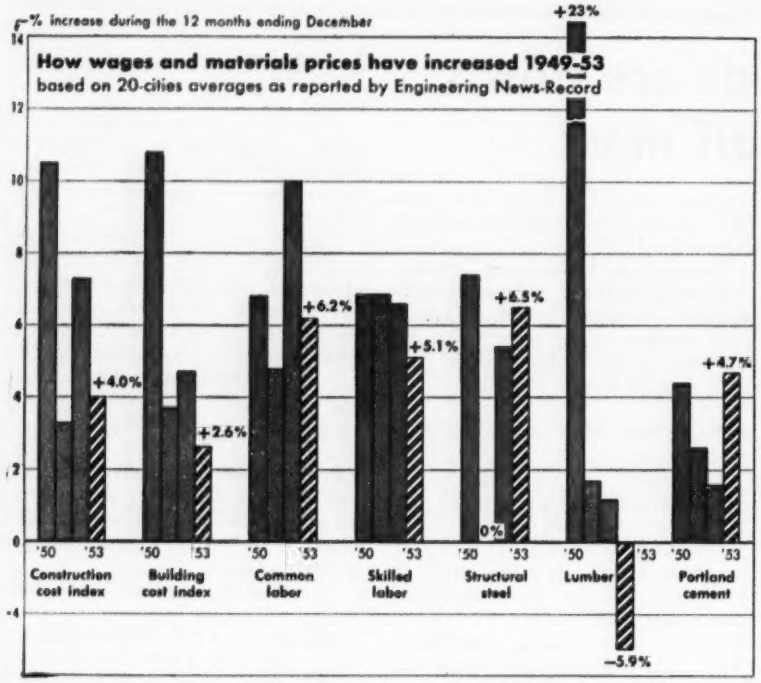
(Business and Finance cont. on page 144)

ENGINEERING CONSTRUCTION CONTRACTS—NOVEMBER 1953

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000*

Four Weeks—Thousands of Dollars (000 Omitted)

	November, 1953							U. S. Cumulative Eleven Months		%	Canada
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1953	1952	Change '52 to '53	November 1953
Public Works											
Waterworks	1,266	1,879	1,235	3,640	3,433	1,809	13,262	214,186	206,407	+ 4	2,400
Sewerage	694	5,456	3,378	8,253	6,296	5,872	29,949	400,642	279,746	+43	2,753
Bridges	557	9,082	9,348	7,276	6,106	2,218	34,587	623,809	376,924	+65	665
Earthwork and drainage	222	250	1,233	762	12,455	6,324	21,246	335,324	453,425	−26	1,826
Streets and roads	9,909	33,611	19,541	14,590	19,752	16,834	114,237	1,646,366	1,345,818	+22	1,411
Public buildings, residential		3,584	6,498	5,580	4,040	3,188	22,890	363,683	575,512	−37	3,325
Other public buildings	7,992	19,645	33,838	13,547	21,306	20,616	116,944	1,577,103	4,175,041	−62	15,898
Unclassified	14,221	1,465	7,245	4,776	3,234	5,216	36,157	762,883	787,007	− 3	11,624
Total public	34,861	74,972	82,316	58,424	76,622	62,077	389,272	5,923,996	8,199,880	−28	39,902
Federal government (included in above classifications)	14,579	1,813	26,940	3,543	15,403	12,577	74,855	1,341,189	4,370,766	−69	15,891
Private											
Bridges				1,300			1,300	8,865	15,719	−44	
Industrial buildings	1,677	21,098	27,638	36,529	55,238	6,202	148,382	2,608,845	2,596,355	+ 1	42,652
Mass housing	4,183	59,796	19,157	62,060	23,211	6,115	174,522	3,224,973	2,782,717	+16	11,615
Commercial buildings	3,875	15,545	12,075	8,667	11,793	8,918	60,873	1,066,484	711,962	+50	7,425
Unclassified	160	369	4,848	1,868	10,159	2,562	19,966	826,809	475,635	+74	135
Total private	9,895	96,808	63,718	110,424	100,401	23,797	405,043	7,735,976	6,582,388	+18	61,827
Total Engineering Construction:											
November, 1953—4 weeks	44,756	171,780	146,034	168,848	177,023	85,874	794,315	.....	.....	.....	101,729
October, 1953—5 weeks	38,858	245,186	195,728	394,357	328,430	266,693	1,469,252	.....	.....	.....	299,275
November, 1952—4 weeks	37,910	259,631	200,719	181,354	193,557	206,708	1,079,879	.....	.....	.....	70,351
Eleven Months—1953	573,463	3,049,021	2,405,641	2,053,364	2,894,360	1,684,123	.....	13,659,972		− 8	1,189,867
Eleven Months—1952	586,975	2,445,801	3,526,000	3,254,440	3,219,873	1,749,179	.....	.....	14,782,268	....	1,127,244
% Change '52 to '53	−2	+25	−32	−6	−10	−4	.....	.....	.....	.....	+6



Construction costs increased this year, but the rise is tapering off

ENR's Construction Cost Index and Building Cost Index showed little change for December. This is the fourth consecutive month that the indexes have remained stable. Both indexes are now slightly below—by one index point—the record highs they reached in August.

Declines in the price of lumber in four cities this month offset boosts in lumber prices in two cities and higher cement prices in two. The net effect was that the Construction Cost Index went down 0.7%. The December level is 611.48. The Building Cost Index is 435.90, down 0.1% from November. In both of the ENR indexes, 1913 = 100.

The long advance in construction costs—in terms of wages and materials prices paid by contractors—showed a marked slowdown this year (chart, above).

ENR's Construction Cost Index rose 4.0% during the year, compared with 7.3% in 1952. The Building Cost Index shows a similar trend, rising 2.6% in 1953 compared with 4.7% last year.

• **Lumber prices**—Lower lumber prices were responsible for holding down the cost rise this year. The 20-cities average price for pine and fir 2x4s dropped 5.9%, with 14 cities reporting a decline. In only three cities—Atlanta, New York, and New Orleans—was there any gain in lumber prices. In three other cities, Dallas, Minneapolis, and Pittsburgh, prices stayed the same.

Prices of the other key heavy-construction materials, cement and structural steel, increased more than in 1951 and 1952 combined. After price controls were abandoned in February, cement rose an average of 4.7% in the 20 reporting cities. The mill prices of structural steel shapes rose 6.5%.

Labor costs rose relentlessly in 1953 as construction unions came away from the bargaining table with substantial gains, including additional fringe benefits. However, wage increases this year were somewhat smaller than the 1952 gains.

The average wage rate for the three skilled trades in the 20 cities—bricklayers, carpenters, and structural ironworkers—rose 5.1% in 1953 compared with a 6.5% increase in 1952. Common laborers on building and heavy construction came up with an average increase of 6.3%, as against 10% last year.

Here's how the 1953 wage increases, including fringe benefits, stacked up by trades, and how they compare with 1952 increases:

	Increase in cents per hour	
	1953	1952
Common labor	11.3	16.6
Bricklayers	10.1	18.7
Carpenters	15.3	19.2
Structural ironworkers	19.2	17.3

Robinson Newcomb joins Council of Economic Advisers

Two experts on construction and one of the world's leading money theorists have been added to Eisenhower's battery of economic advisers.

The construction specialists are both on the staff of the Council of Economic Advisers working under its chairman, Arthur F. Burns, (ENR July 23, p. 60).

Robinson Newcomb, an old hand in Washington official circles, is back with the council, where he served several years ago. Recently he has been a private construction consultant, working with the council. He's expected to study public works plans to be used in case a recession comes.

Clarence D. Long is on a year's leave of absence from Johns Hopkins University. He wrote "Building Cycles and the Theory of Investment" and is also an expert on employment statistics. He will use both of these specialties as one of Burns' top aides.

The appointments of Long and Newcomb reveal Burns' deep interest in the related fields of construction and finance—on which he rests most of his hopes for combating a real recession if one should develop. Burns is having a special study made of financial institutions and their resources. He is also interested in liberalizing credit terms on home repair and modernization, as an antidote to any possible slump.

The newly added money expert is 68-year-old Walter Stewart, who differs from most money experts by having made a fortune from his own theories. He will become the third member of the council. Relatively unknown by younger economists, Stewart is nevertheless rated by older experts as a master in the field of money and credit. He made economic history 30 years ago in Washington by setting up the Federal Reserve Board's present Division of Statistics and Research. After making a considerable private fortune in Wall Street investment banking, he returned in 1938 to his first love—teaching—at the Institute for Advanced Studies, Princeton, N. J.

Steel for MC&S

Contracting firm wants to acquire another mill

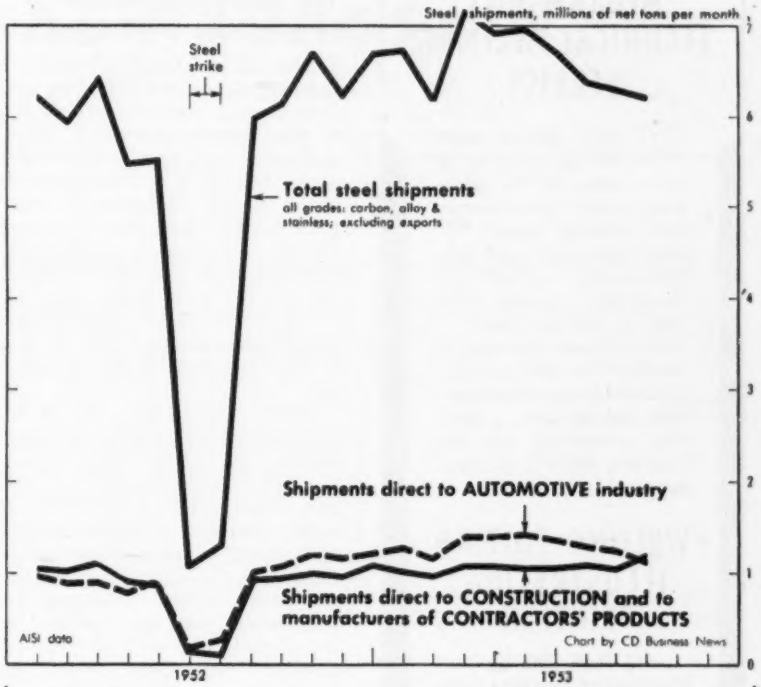
Louis E. Wolfson, the far-ranging financier who, among other things is president and board chairman of Merritt-Chapman & Scott Corp., is moving to diversify the contracting company. Recently, MC&S acquired a small steel company with an annual ingot capacity of 54,000 tons, planning to use about 20% of its production in construction (ENR Nov. 12, p. 92). Now Wolfson is negotiating to acquire a much bigger steel company, Newport Steel Corp., Newport, Ky.

Newport Steel has an annual ingot capacity of about 700,000 tons, about half of which is hot-rolled sheets, coils, and pipe, products which of course could be used in construction. It also has a wholly owned subsidiary, Utah Radio Products Co., Inc., which makes radio and TV cabinets, speakers, and transformers, and also hardwood plywood.

MC&S directors last week authorized negotiations to acquire Newport Steel through an exchange of stock. MC&S would offer Newport Steel shareholders one share of MC&S common (after giving effect to the 25% stock dividend payable next Jan. 11) in exchange for each 2¼ shares of Newport common. The offer is conditional upon acceptance by holders of at least two-thirds of Newport common.

Newport Steel has about 1.1 million shares of stock outstanding. If the merger went through, it would mean that about 479,000 more shares of MC&S common would be issued. Including the January stock dividend, MC&S has about 953,000 shares outstanding. Last November, a speical stockholders meeting authorized an increase in MC&S capitalization from 1 million to 3 million shares.

That indicates that the Newport merger, assuming it goes through, may not be the last of Wolfson's merger moves in connection with MC&S. He says that the proposal to Newport Steel represents a "carefully considered further step in the recently launched expansion program."



Construction: No. 1 steel buyer

Now that the auto industry is temporarily cutting production, the construction industry has regained its position as Number One direct purchaser of steel products (chart).

While total demand for steel has tapered off this year, shipments direct to construction and to manufacturers of contractors' products have shown a slight upward trend. Actually, steel tonnage going to new construction is much higher than shown in the chart, since a sizable proportion of steel shipped to warehouses eventually goes into construction.

Since production of cars and trucks is expected to be lower next year than in 1953, construction has a good chance of being the steel industry's biggest customer in 1954. ENR predicts that heavy-construction contracts will be off only 2½% (ENR Oct. 1, p. 21).

Erie Mining picks contractor for big taconite plant

Erie Mining Co. has selected the Engineering Department of Anaconda Copper Mining Co. to handle engineering and construction of its big taconite beneficiation plant at Aurora, Minn., in the iron ore country.

Purpose of the plant will be to concentrate taconite ore into pellets which readily can be refined in blast furnaces. Erie Mining already has spent $15 million in development work, including the construction and operation of an experimental plant. Now it plans a concentrating plant with an annual capacity of 7.5 million tons, which eventually may be enlarged to one with 10.5 million tons capacity.

In addition to the plant, a 73-mi, single-track railroad will be built from the plant site to Two Islands, Minn., on the north shore of Lake Superior. A harbor will be built there, about 4,400 ft. long, 1,300 ft. wide. Dock facilities will be built to accommodate lake carriers bringing coal to the dock and carrying the iron pellets to lower lake ports on their way to the blast furnaces. Erie Mining also will build a large electric power plant at Two Islands, and a town to house employees near Aurora.

Total cost of the project is estimated to be in the neighborhood of $300 million. It is being financed by a $207-million mortgage bond issue recently purchased by a group of nine insurance companies and Bethlehem Steel Corp.

A good deal of the equity capital also has been put up by Erie Mining's four stockholders: Bethlehem Steel (45%), Youngstown Sheet & Tube Co. (35%), Interlake Iron Corp. (10%) and Steel Co. of Canada, Ltd. (10%).

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Tax privileges still offered to producers of 68 items

The Office of Defense Mobilization last week announced that there are 68 defense items where it is still prepared to grant fast tax writeoffs in order to encourage production. Arthur S. Flemming, director of ODM, reports that of the original 237 defense production goals, 120 have been taken care of satisfactorily. Accelerated amortization is no longer being granted to productive facilities for items in this group. On 49 others, ODM has stopped issuing certificates of necessity while it decides whether any more expansion is necessary.

Here is a partial list of the 68 items where fast amortization for productive facilities may still be granted: commercial aircraft, alkylate, all stages of aluminum production, steam boilers, steel castings, chromite, cobalt, metallurgical coal, copper, compressed gas cylinders, electrolytic tin plate, electronic products for the military, acid-grade fluorspar, freight cars, gas pipelines, gray iron castings, iron ore lead, diesel locomotives, manganese, metal cans, molybdenum, nickel, oil refineries, oil pipelines and storage, ore carriers, wide-flange structural shapes, oceangoing tankers, titanium, steam turbines, and zinc.

Work in place stays high in November, U.S. reports

Spending for new construction put in place in November was higher than it usually is at this time of the year. The Commerce and Labor Departments estimate that total spending was $3 billion, down only 7% from October. Most major categories continued strong for the season. Commercial construction stood out with a contra-seasonal rise to an all-time monthly high of $190 million, more than two-thirds above November 1952.

Private spending for housing stayed above the billion-dollar mark for the seventh consecutive month. Dollar volume industrial construction, farm construction, public housing, military and naval installations, and some other public categories declined compared with a year ago. But the loss was compensated by gains in such categories as public utilities and highways.

For the first 11 months, total expenditures for new construction put in place were about $32 billion, up 7% from the 1952 period. Physical volume, the government statisticians estimate, was up 3%.

Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

	This Week	Cumulative 50 wks 1953	1952	% chge
Federal	$8.9	$1,362.0	$4,458.4	−69
State and municipal ..	118.1	4,806.5	3,978.5	+21
Total pub...	127.0	6,168.5	8,436.9	−27
Total priv...	528.2	8,441.0	6,930.5	+22
U. S. total..	**$655.2**	**$14,609.5**	**$15,367.4**	**−5**
Contracts by type of work				
Waterworks .	$2.4	$234.9	$216.4	+9
Sewerage ...	4.1	410.8	297.8	+38
Bridges	14.5	658.9	405.5	+62
Highways ..	61.4	1,731.9	1,383.0	+25
Earthwork, waterways .	1.6	342.6	475.5	−28
Buildings:				
Public, excl. hsg.	29.2	1,644.7	4,253.9	−61
Housg., pub.	3.6	372.6	589.7	−37
Housg., priv.	68.3	3,359.6	2,906.2	+16
Commercial	10.2	1,117.8	812.0	+38
Industrial .	447.3	3,107.7	2,679.2	+16
Unclassified.	12.6	1,628.0	1,348.2	+21
Total	**$655.2**	**$14,609.5**	**$15,367.4**	**−5**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

New capital for construction

	Week of Dec. 3 1953	Cumulative 49 Wks 1953	% chge 1952-53
Corporate securities	$17.5	$3,913.0	+13
State and municipal:			
Excluding housing	76.1	5,120.8	+46
Housing	...	262.1	−13
Federal loans	3.1	110.6	−67
Federal aid	...	770.9	+40
Total non-federal..	**$96.7**	**$9,177.4**	**+23**
Federal approp.:			
In U. S.....	...	$1,566.7	−79
Outside U. S....	...	28.9	−85
Total new capital..	**$96.7**	**$10,773.1**	**−29**

ENR indexes		Base Years = 100 1913	1926	1949
Constr.. cost..	Dec. '53	611.48	293.94	128.19
	Nov. '53	611.92*	294.15*	128.28*
Bldg.... cost..	Dec. '53	435.90	235.63	123.91
	Nov. '53	436.34	235.87	124.03
Volume..	Nov. '53	354	144	102
	Oct. '53	528	215	153

*Revised

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $1.50 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, 330 West 42nd Street, New York 36, N. Y.

Bids: December 18, 1953

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 18th day of December 1953, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1 G. L. Nickerson, District Engineer, 353 Broadway, Albany, N. Y.				
		DISTRICT No. 2 L. Ketchum, District Engineer, 109 No. Genesee Street, Utica, N. Y.				
		DISTRICT No. 3 William Robinson, District Engineer, 301 E. Water Street, Syracuse, N. Y.				
		DISTRICT No. 4 E. G. H. Youngman, District Engineer, Barge Canal Terminal, Rochester, N. Y.				
		DISTRICT No. 5 C. R. Waters, District Engineer, 65 Court Street, Buffalo, N. Y.				
		DISTRICT No. 8 J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.				
Albany, Greene, Schen., Herk., Mad., Mont., Oneida, Cay., Onon., Seneca, Gen., Monroe, Ont., Erie, Oran., Rock., Ulster, West.	T.U.B. 53-1P	New York State Thruway—Hudson, Catskill, Mohawk & Ontario Sections (Plumbing at Toll Plazas)	....	Sanitary Equipment & Sewage Treatment; Water Supply Wells; Water Purification and Distribution Equipment and Misc. Work at 40 Toll Plazas	$20,000 Plans $50	$340,000
Albany, Greene, Schen., Herk., Mad., Oneida, Cay., Mont., Onon., Seneca, Gen., Monroe, Ont., Erie, Oran., Rock, Ulster, West.	T.U.B. 53-1H	New York State Thruway—Hudson, Catskill, Mohawk & Ontario Sections (Heating at Toll Plazas)	....	Furnishing and Installing Heating and Ventilating Facilities at 40 Toll Plazas	$20,000 Plans $15	346,000
Albany, Greene, Schen., Herk. Mad., Mont., Oneida, Cay., Onon., Seneca, Gen., Monroe, Ont., Erie, Oran., Rock., Ulster, West.	T.U.B. 53-1E	New York State Thruway—Hudson, Catskill, Mohawk & Ontario Sections (Electrical Work at Toll Plazas)	....	Furnishing and Installing Electrical Facilities at 40 Toll Plazas	$33,000 Plans $25	600,000
		Note: Plans and proposals for T.U.B. 53-1P, T.U.B. 53-1H, and T.U.B. 53-1E may be procured only at our Albany and New York City offices.				
		DISTRICT No. 3 William Robinson, District Engineer, 301 E. Water Street, Syracuse, N. Y.				
Onon.	F.A.C. 53-18	Syracuse City: Adams Street Proj. U-446(4)	0.35	Asp. Conc. Ty. 2A = 0.31 Mi. Misc. Work = 0.04 Mi.	$12,000 Plans $10	227,000
		DISTRICT No. 4 E. G. H. Youngmann, District Engineer, Barge Canal Terminal, Rochester, N. Y.				
Monroe	O.T. 53-9	New York State Thruway—Ontario Section-Sub. 9 (Toll Plaza at Rte. 15 Interchange)	0.13	9" Cem. Conc. Pavt. 61' Wide, 0.03 Mi. Misc. Work = 0.10	$1,800 Plans $10	32,0000
Monroe	P.S.C. 6014	Elimination of N.Y.C.R.R. (at Washington St.) with East Rochester-Penfield, S.H. 1337	0.35 Acc. 0.44 Hwy.	8" Cem. Conc. Pavt. 44' Wide = 0.23 Mi. Asp. Conc. Ty. 3A = 0.35 Mi. Misc. Work = 0.21 Mi. R.R. Sep. Built-Up Beam 50.5'	$45,000 Plans $15	825,000
		DISTRICT No. 8 J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.				
Rockland	H.T. 53-9 R.C. 53-118 S.T. 53-32	New York State Thruway—Hudson Section-Sub. 8 (Suffern-Nyack Pt. 3) Palisades Interstate Parkway Interchange; 8 Misc. Sec. Roads; Coyles Corners-Short Clove, S.H. 9005 Rt. 303 Interchange;	5.77 Acc. 4.5 Thy.	9" Cem. Conc. Pavt. 26' 28' Var. Wide = 4.79 Mi. 8" Unreinf. Cem. Conc. Pavt. Var. Wide = 3.26 Mi. Asp. Conc. Ty. 1A, Opt. = 0.84 Mi. Grading and Misc. Work = 1.04 Mi. R. R. Track Relocation = 0.36 Mi. 7 Hy. Sepa. Comp. I-Beams 47', 218.8', 258.7', 259.6', 48.5', 90' and 251.4' 1 Br. Comp. I-Beam 62' 1 R.R. Sep. Comp. I-Beam 210'	$400,000 Plans $100	$7,620,000
West.	F.A.S.W.C. 53-2 F.A.S.T. 53-28 H.T. 53-7	New York State Thruway—Southern Westchester Connection-Sub. 11 (N. Y. City Line-Tuckahoe Rd Pt. 2) Tuckahoe Rd-Interchange: Hudson Sect.-Sub. 10-(Tuckahoe Rd.-Tarrytown) and 5 Sec. Cross Rds. Proj. UI-1100(1) Cont. #1	1.82 Acc. 1.39 Thy.	9" Cem. Conc. Pavt 26, 37' W.de = 1.39 Mi. 9" Unreinf. Cem. Conc. Pavt. Var. Wide = 1.42 Mi. Asp. Conc. Ty. 1A, Opt. = 0.30 Mi. T-C Graded Grav. (B.D.S.T.) = 0.10 Mi. 2 Hy. Sepa. Comp. I-Beams 132' and 168'	$220,000 Plans $50	4,000,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders." When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated. The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: January 20, 1954

School Construction Projects Nos. 53-105 on St. Thomas and St. John and 53-504 on St. Croix Virgin Islands

Sealed bids in single copy for furnishing all labor, equipment, and materials and performing all work for the project described herein will be received until 2:00 P.M. Atlantic Standard Time January 20, 1954 in the Office of the District Engineer, Insular Division, St. Thomas Virgin Islands and then publicly opened, and read aloud.

Information regarding bidding material, bid guarantee, and bonds, plans and specifications and other proposed contract documents are open for public inspection at the office of District Engineer, Insular Division, Thomas G. Mooney, Charlotte Amalie, St. Thomas, U. S. Virgin Islands; M. A. Dyer Company, 24 School Street, Boston, Massachusetts; Lester M. Marx, Room 2713 Interior Building, Washington 25, D. C.; A.G.C. Office, 1113 Congress Building, Miami, Florida; Builders Exchange, 46 Northeast 6th Street, Miami, Florida; Housing and Home Finance Agency, Room 313 N. Y. Department Store Building, 1064 Ponce de Leon, Santurce, Puerto Rico; and F. W. Dodge Corp., 119 West 40th Street, New York 18, N. Y.

Plans and specifications may be procured from the office of M. A. Dyer Company (Architects-Engineers) at 24 School Street, Boston, Massachusetts, upon deposit of the following:

Christiansted Consolidated School (Elementary portion)	$ 55.00
LaVallee Elementary School	30.00
Christiansted and LaVallee together	65.00
James Madison, Robert Herrick, and James Monroe Elementary Schools together	40.00
Cruz Bay Consolidated School	40.00
East End Elementary School	30.00
Horace Mann Elementary School	30.00
Benjamin Franklin Elementary School	30.00
Cruz Bay, East End, Horace Mann, and Benjamin Franklin together	65.00
All nine schools together	100.00

Deposit shall be only by certified check payable to the Treasurer of the United States, which will be refunded to bona fide bidders upon the return of plans and specifications in good condition within thirty (30) calendar days from the date of bid opening. A bona fide bidder includes any person who submits a bid for a general contract, but does not include a person who submits a quotation to the general contract bidders. To persons who procure plans and specifications upon payment of the above stated amounts, and who do not submit a bid, seventy-five (75) percent of the deposit amount will be refunded upon the return thereof in good condition within thirty (30) calendar days from the date of bid opening. No refund will be made for re turn after that time.

Bonds, etc.

Each bid must be accompanied by a satisfactory bid guaranty in an amount not less than 5 percent of the total bid.

The successful bidder will be required to furnish a performance bond and payment bond, each in the amount of 100 percent of the contract price.

No bid may be withdrawn until thirty (30) calendar days after the scheduled closing time for the receipt of bids.

The Government reserves the right to award a contract for any or all schools and/or sections on the basis of the basic bid for each school and/or section or any combination of schools and/or sections or by the acceptance of any or all of the alternates, whichever course is in the best interests of the United States.

Description of work

The construction includes:

Section A, St. Croix, Virgin Islands, Project 53-504.

1. Christiansted Consolidated School, (Elementary part) new construction.
2. LaVallee Elementary School, alterations and additions.

Section B, St. Thomas, Virgin Islands, Project 53-105.

Alterations and additions to:

1. James Madison Elementary School.
2. Robert Herrick Elementary School.
3. James Monroe Elementary School.

Section C, St. John, Virgin Islands, Project 53-105.

1. Cruz Bay Consolidated School, new construction.
2. East End Elementary School, addition.
3. Horace Mann Elementary School, new construction.
4. Benjamin Franklin Elementary School, addition.

Bids: December 18, 1953

River Interceptors

PROJECT WVA 46-P-5A, UNIT ONE, SUB-SECTION 3 & 4
KANAWHA RIVER INTERCEPTORS, PATRICK STREET TO ELK RIVER
CHARLESTON, W. VA.

The Sanitary Board of The City of Charleston, Charleston, West Virginia, will receive sealed bids for "Kanawha River Interceptors, Patrick Street to Elk River" until 2 P M. Eastern Standard Time on the 18th day of December, 1953, at the office of The Sanitary Board, Room 15, City Building, at which time and place all bids will be publicly opened and read aloud.

ESTIMATED BID QUANTITIES

SUB-SECTION 3 Principal items

5400 lineal feet 60 inch diameter pipe sewer in tunnel, steel liner plate with concrete pipe lined and plain alternate.
400 lineal feet average 18" V.C.P. in tunnel regulator leads.
300 cubic yards regulator concrete.
390 vertical feet manholes.

SUB-SECTION 4 Principal items

3000 lineal feet 48" diameter pipe sewer in tunnel as in sub-section 3.
100 lineal feet 18" V.C.P. in tunnel.
20 cubic yards regulator concrete.
280 vertical feet manholes.
Pool level or above.
Sand or clay strata. Cores and data for contractors information will be available in two weeks. Furnished as addenda, but not guaranteed by the owner.

The successful bidder will be required to furnish a satisfactory performance bond in the amount of 100 per cent of contract.

Liquidated damages for delay will be One Hundred Dollars ($100.00) per day for each calendar day beyond the date specified in the contract.

The contract documents, including plans and specifications are on file at the office of The Sanitary Board, City Building, Charleston, West Virginia, and at the office of Settle Engineers, Inc., 2nd Floor Peoples Building, Charleston, West Virginia, where they may be examined free of charge.

Copies of the documents may be obtained by depositing Forty Dollars ($40.00) with Settle Engineers, Inc., 2nd Floor Peoples Building, Charleston, West Virginia, for each set of documents so obtained. The amount of the deposit for one (1) set of documents will be refunded to each actual bidder who returns the plans and documents in good condition within five (5) days after the opening of bids.

The Sanitary Board of The City of Charleston reserves the right to reject any or all bids and to waive any informalities in bidding.

A certified check or cashier's check, payable to The Sanitary Board of The City of Charleston, West Virginia, or a satisfactory bid bond executed by the bidder and a surety company authorized to do business in West Virginia, in an amount of dollars at least equal to five per cent (5%) of the bid or an equal amount of U. S. Government Bonds, shall be submitted with each bid.

No bid may be withdrawn after the scheduled closing time for receipt of bids, for at least sixty (60) days thereafter.

THE SANITARY BOARD OF THE CITY OF CHARLESTON
By: F. Duane Hill, Secretary

Bids: January 28, 1954

High School Building

JANESVILLE, WISCONSIN

The Board of Education, Janesville, Wisconsin will receive sealed bids for providing all labor, materials, equipment and services necessary for and incidental to the construction and completion of the new High School Building and Heating Plant to be located at Ruger, Randall and Racine Streets, Janesville, Wisconsin, as shown on the plot plan, until 2 P.M., on January 28, 1954 at the office of the City Clerk of the City of Janesville, at which time all bids will be publicly opened and read aloud. All bids should be properly marked "Bid on Janesville Senior High School" and also marked to designate the contract for which each bid is submitted.

Bids will be received for separate contracts as follows:

BID A. General Construction including:

a. Excavating & grading
b. Concrete Work
c. Structural Steel & Misc. Iron
d. Masonry
e. Carpentry
f. Roofing & Waterproofing
g. Sheet Metal
h. Aluminum Work
i. Lathing & Furring
j. Plastering
k. Tiling
l. Terrazzo
m. Painting & Finishing
n. Glazing
o. Resilient Flooring

BID B. Electrical Work

BID C. Plumbing

BID D. Heating & Ventilating

BID E. Elevator

BID F. Coal & Ash Handling Equipment

Plans, specifications and other Contract Documents are on file and may be examined at the office of the City Clerk of the City of Janesville; at the office of Law, Law, Potter & Nystrom, Architects, 121 South Pinckney Street, Madison, Wisconsin; at the Builders Exchange in Milwaukee, Minneapolis and St. Paul and at the F. W. Dodge Corporation offices in Chicago and Milwaukee, and at the Mechanical Exchange of Madison, 133 South Butler Street.

Plans, specifications and other Contract Documents may be obtained by depositing $60.00 for General Sets and $25.00 for Mechanical Sets with the Architects. The deposit will be refunded to bidders who submit a bona fide bid and return one set of plans and specifications in good condition not later than one week after bids are filed. $20.00 will be refunded for General Sets and $10.00 for each of all other sets returned.

No bid will be received unless accompanied by a certified check or bid bond equal to at least 5% of the bid payable to the City as a guaranty that if the bid is accepted, bidder will execute and file the proper contract and bond within seven days after the award of the contract. If the successful bidder so files the contract and bond, upon execution of the contract by the City, the check or bid bond will be returned. In case bidder fails to file such contract and bond, the amount of the check or bid bond shall be forfeited to the City as liquidated damages.

The right is reserved to reject any or all bids and to waive informalities. No bid may be withdrawn within 30 days after the scheduled time of closing bids.

Not less than the wage rates set forth in the contract documents, which have been established in accordance with the provisions of Section 348.50 Wis. Statutes, 1951, shall be paid.

The award of contracts will be made subject to the provisions of Section 66.29, Wisconsin Statutes, 1951.

Published by authority of the:

CITY OF JANESVILLE, WISCONSIN
By: Warren C. Hyde, City Manager
Harlen Bradford, City Clerk

OFFICIAL PROPOSALS

Bids: January 21, 1954

Ohio Turnpike Commission
139 East Gay Street
Columbus 15, Ohio

Contracts TC-2A and TC-2B

Sealed Proposals will be received by the Ohio Turnpike Commission for the performance of Contracts TC-2A and TC-2B.

The Work covered by Contracts TC-2A and TC-2B consists generally of the furnishing, installation, and maintenance of vehicle-classifying, toll-system equipment at seventeen toll plazas on Ohio Turnpike Project No. 1.

Contract TC-2A provides for the rental of the completed toll system to Ohio Turnpike Commission for a fixed monthly rate and or maintenance services, all for a period of five years.

Contract TC-2B provides for the sale of the completed toll system to Ohio Turnpike Commission and for maintenance services for a period of five years.

Copies of the Plans and General Specifications for said contracts are available for public inspection or purchase at the office of the Chief Engineer, Ohio Turnpike Commission, 139 East Gay Street, Columbus 15, Ohio. These documents may be purchased from said Chief Engineer for the following sums per set, which sums are non-returnable.

General Specifications for Ohio Turnpike Project No. 1.....$5.00
Plans $1.00

Forms of copies of all remaining Contract Documents (including the Proposals for Contract TC-2A and Contract TC-2B, the Affidavit which must accompany any such Proposal, this Notice to Bidders, the Special Provisions applying to said Contracts, the Contract to be entered into with the successful Bidder, and the Bond(s) to be furnished with such Contract) will be furnished upon request and without charge to any interested person at the Chief Enfineer's office on and after December 1, 1953. One set (or, if required, a reasonable additional number) of said documents will be furnished without charge to each purchaser of said set of Plans or General Specifications.

All Proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

Each Proposal must be accompanied by a certified check or checks on a solvent bank or banks, payable to the Ohio Turnpike Commission, in an amount not less than that indicated below:

For Contract TC-2A: Three times the total monthly rental bid for equipment in such Proposal; and

For Contract TC-2B: 5% of the total amount bid for equipment in such Proposal.

If a Bidder bids on both Contracts, one certified check will suffice, in the larger of the amounts produced by the above computations. The Commission may at any time cash any such check. Each such check, or the proceeds thereof, will be held by the Commission as a guaranty that if any Proposal guaranteed thereby is accepted, a Contract will be entered into and the performance of the Proposal secured. Each such check, or the proceeds thereof, will be returned or forfeited as provided in G-3.03 and G-3.06 of the General Specifications; provided that if there be a forfeiture, it shall be in the amount applicable to the Proposal with respect to which the forfeiture occurs, and any excess thereover will be returned to the Bidder.

All bids must be received on or before 10:00 A.M., Eastern Standard Time, January 21, 1954 in the offices of the Ohio Turnpike Commission, 139 East Gay Street, Columbus 15, Ohio. At said hour the bid box will be opened and all Proposals will be publicly opened and read at said office.

Contracts TC-2A and TC-2B are alternate Contracts, and only one of the Contracts will be awarded, if any award be made. The award of the Contract, if an award be made, will be to the lowest and best Bidder whose Proposal complies with all the prescribed requirements. The Bidder is cautioned that Ohio Turnpike Commission has not yet made a final decision to use the vehicle-classifying type of equipment specified in Contract TC-2A and Contract TC-2B rather than non-classifying toll-system equipment. Obviously, if the Commission determines to use non-classifying toll-system equipment, no award of either Contract TC-2A or Contract TC-2B will be made. However, the amounts bid for Contracts TC-2A and TC-2B will be among the factors which the Commission will consider in making its determination of the type of toll-system equipment to be used on Ohio Turnpike Project No. 1. For this reason and others, the Commission reserves the right to reject any and all Proposals. The Commission further reserves the right to waive technicalities.

OHIO TURNPIKE COMMISSION

Bids: January 21, 1954

Ohio Turnpike Commission
139 East Gay Street
Columbus 15, Ohio

Contract TC-1

Sealed Proposals will be received by the Ohio Turnpike Commission for the performance of Contract TC-1.

The Work covered by Contract TC-1 consists generally of the furnishing, installation, and maintenance for a period of one year of non-classifying toll-system equipment at seventeen toll plazas on Ohio Turnpike Project No. 1. The Contract provides for the sale of the completed toll system to the Ohio Turnpike Commission and for maintenance services for a period of one year.

Copies of the Plans and General Specifications for said Contract are available for public inspection or purchase at the office of the Chief Engineer, Ohio Turnpike Commission, 139 East Gay Street, Columbus 15, Ohio. These documents may be purchased from said Chief Engineer for the following sums per set, which sums are non-returnable:

General Specifications for Ohio Turnpike Project No. 1.....$5.00
Plans $1.00

Forms or copies of all remaining Contract Documents (including the Proposal for Contract TC-1, the Affidavit which must accompany such Proposal, this Notice to Bidders, the Special Provisions applying to said Contract, the Contract to be entered into with the successful Bidder, and the Contract Bond to be furnished with such Contract) will be furnished upon request and without charge to any interested person at the aforesaid Chief Engineer's office on and after December 1, 1953. One set (or, if required, a reasonable additional number) of said documents will be furnished without charge to each purchaser of said set of Plans or General Specifications.

All Proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

Each Proposal must be accompanied by a certified check or checks on a solvent bank or banks, payable to the Ohio Turnpike Commission, in an amount not less than 5% of the total amount bid in such Proposal. The Commission may at any time cash any such check. Each such check, or the proceeds thereof, will be held by the Commission as a guaranty that if any Proposal guaranteed thereby is accepted, a Contract will be entered into and the performance of the Proposal secured. Each such check, or the proceeds thereof, will be returned or forfeited as provided in G-3.03 and G-3.06 of the General Specifications.

All bids must be received on or before 10:00 A.M., Eastern Standard Time, January 21, 1954, in the office of the Ohio Turnpike Commission, 139 East Gay Street, Columbus 15, Ohio. At said hour, the bid box will be opened and all Proposals will be publicly opened and read at said office.

The award of the Contract, if any award be made, will be the lowest and best Bidder whose Proposal complies with the prescribed requirements. The Bidder is cautioned that Ohio Turnpike Commission has not yet made a final decision to use the non-classifying type of equipment specified in Contract TC-1 rather than vehicle-classifying toll-system equipment. If the Commission determines to use vehicle-classifying toll-system equipment, no award of Contract TC-1 will be made. However, the amounts bid for Contract TC-1 will be among the factors which the Commission will consider in making its determination of the type of toll-system equipment to be used on Ohio Turnpike Project No. 1. For this reason and others, the Commission reserves the right to reject any and all Proposals. The Commission further reserves the right to waive technicalities.

OHIO TURNPIKE COMMISSION

OFFICIAL PROPOSALS

Bids: December 18th, 1953

New York State Road Work

Sealed Proposals for the improvement and Repair of Ditch No. 8-B (Big Island Channel) and Ditch No. 21 (Pumpkin Swamp Channel), which form a part of Quaker Creek in the Towns of Goshen and Warwick, Orange County, in Drainage District No. 3 the Wallkill Valley Drainage Improvement District; will be received by Henry A. Cohen, Director, Bureau of Contracts and Accounts, Department of Public Works, The Governor Alfred E. Smith State Office Building, Albany, N. Y. on behalf of the Department of Public Works, until 10:30 o'clock A.M., Eastern Standard Time on Friday, December 18, 1953, at which time and place they will be publicly opened and read. The approximate amount of this work is $36,300.

Proposals shall be endorsed on the envelope "Proposal for Wallkill Valley Drainage Improvement District, District No. 3, Construction Project C, Quaker Creek, Big Island Channel (Ditch No. 8-B) and Pumpkin Swamp Channel (Ditch No. 21)" and addressed to Henry A. Cohen, Director, Bureau of Contracts and Accounts, The Governor Alfred E. Smith State Office Building, Albany, N. Y. and shall be accompanied by a deposit in the form of draft or certified check, upon some National or State Bank or Trust Company within the State in good credit and payable on sight to the Water Power and Control Commission, in the amount of five (5) percentum of the total amount of the proposal as a guarantee that the bidder will enter into a contract if it be awarded to him, within ten (10) days after notice of such award.

The blank spaces in the proposal must be filled in in ink and no change shall be made in phraseology of the proposal. Proposals that carry any omissions, erasures, alterations or additions may be rejected as informal. Successful bidder will be required to give a bond conditioned for the faithful performance of the contract and a separate bond for the payment of the laborers and materialmen, each bond in the sum of one hundred (100) percentum of the amount of the contract. Corporations submittting proposals shall be authorized to do business in the State of New York. Drawings and specifications may be examined free of charge at the following offices:

Henry TenHagen, Deputy Chief Engineer
The Governor Alfred E. Smith State Office Building, Albany, New York

State Architect, State Office Building, 270 Broadway, New York City

J. S. Bixby, Dist. Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.

J. C. Thompson, Executive Engineer, Water Power and Control Commission, 110 State Street, Albany 7, New York

Drawings and specifications may be obtained from Henry A. Cohen, Director, Bureau of Contracts and Accounts, The Governor Alfred E. Smith State Office Building, Albany, New York upon deposit of $10.00 for each set.

Refund in full will be made to bidders for one set of plans and specifications returned in good condition within 30 days of award of contract or the rejection of the bids. A 50% reimbursement will be made for the return, in good condition, of all other sets of the plans and specifications within 30 days following the award of the contract or the rejection of the bids.

Checks for plans and specifications shall be made payable to the State of New York. Proposal blanks and envelopes will be furnished without charge.

B. D. Tallamy, Superintendent
New York State Deartment of Public Works

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4087) will be received at Huron, South Dakota, until December 30, 1953, for furnishing labor and materials for Sioux City Substation, Transmission Division, Missouri River Basin Project. Location: 2 miles southwest of Hinton, Iowa. Principal items are: 34,500 cu. yds. excavation; 170,000 lbs. furnishing and erecting steel structures; 320 cu. yds. reinforced concrete; lump sum, constructing service building; and other work. Completion time 510 days. For particulars, address Bureau of Reclamation, Huron, South Dakota; or Building 53, Denver Federal Center, Denver, Colorado.

W. A. DEXHEIMER, Commissioner

OFFICIAL PROPOSALS

Bids: January 18, 1953

Construction of Bridge

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
(RAILWAY BOARD)
GANGA BRIDGE PROJECT (INDIA)

1. The General Manager and Chief Engineer, Ganga Bridge Project, proposes to invite tenders for the construction of a Rail-cum-Road bridge across the Ganga River near Mokameh (Bihar) on the Eastern Railway.

2. Tenders will cover the following items of works for the proposed bridge:

(a) Piers and their Foundations: Foundations will be required to be taken down to a depth of 170 feet in the river bed below the low water level for the main piers.

(b) Fabrication, supply and erection of steel girders for the bridge.

(c) Reinforced concrete roadway decking on the bridge.

3. Two tentative designs have been prepared for the proposed bridge.

First: Consisting of Nine main spans of which seven will be 600 feet each, two 500 feet each and four shore spans 104'-8" each, centre to centre of bearings. The main spans will be balanced cantilever type with a 100 ft. cantilever arm at each end and 400 ft. suspended spans.

Second: Consisting of fourteen main spans each 413'-4" centre to centre of bearings and four shore spans 104'-8" each, centre to centre of bearings, simply supported at the ends.

Tenderers will be free to quote for either or for both of the above designs and for any other alternative design that they might like to suggest to the required specifications and standards of loading.

4. Site plans and other preliminary information required by intending tenderers may be obtained from the General Manager and Chief Engineer, Ganga Bridge Project, Room No. 206, 'N' Block, Raisina Road, New Delhi, on any working day after the 16th November 1953 at Rs 25/—per set. Any additional information required can be supplied on application.

5. Intending tenderers are advised in their own interest to study all local conditions governing the works at site, availability and sources of supply of skilled and unskilled labour and suitable building materials before tendering.

6. Tender forms, together with the necessary drawings, schedule of quantities, specifications and conditions of contracts will be available for sale from 18th January, 1954, at the Project Headquarters Office at Post Office Hathidah (Mokameh, Bihar) @ Rs 100/—per set.

7. The Project Administration reserves the right to accept any tender even though not the lowest or to give all the works to one party or to split up the work between more than one party or to reject all the tenders without assigning any reason.

G. Pande
General Manager & Chief Engineer,
Ganga Bridge Project, Mokameh.
Camp Office, Room No. 206, 'N' Block,
Raisina Road, New Delhi.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-4086) will be received at Denver, Colorado, until January 19, 1954, for furnishing galvanized steel double circuit towers for Big Bend-Granite Falls 230-kilovolt transmission line, Missouri River Basin Project, South Dakota. Delivery is desired within 540 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado.

D. A. DEXHEIMER, Commissioner

Contractors Watch This Section—

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

OFFICIAL PROPOSALS

Bids: December 28, 1953

Repairs to Dispatcher's Booth

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY BUS TERMINAL
NEW YORK, N. Y.
CONTRACT O & M 214
PROPOSAL NO. 305

Sealed proposals for furnishing all labor, material and equipment to repair Dispatcher's Booth No. 36, Long Distance Bus Travel, Port Authority Bus Terminal, New York, N. Y., will be received at the office of the Director of Purchase of The Port of New York Authority, Room 900, 111 8th Ave., New York 11, until 11:00 A. M. (E.S.T.) Monday, December 28, 1953, at which time and place said proposals will be publicly opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

Bids: January 12, 1954

Dwelling Unit Increment

HOUSING AUTHORITY OF THE CITY OF LOS ANGELES, CALIFORNIA
1401 EAST FIRST STREET
LOS ANGELES 33, CALIFORNIA
NOTICE TO GENERAL CONTRACTORS
CALL FOR BIDS
FOR PART 2—533 DWELLING UNIT INCREMENT
JORDAN DOWNS RECONSTRUCTION
PUBLIC HOUSING ADMINISTRATION
PROJECT NO. CAL 4-16
LOCATION: Between 97th Street and 103rd Street at Grape Street, Los Angeles, California
Plans and Specifications
Prepared By
James R. Friend, A. I. A.
Architect
556 West Fifth Street, San Pedro, California
TErminal 3-5237

Invitation for Bids will be published November 30, 1953. Revised Plans and Specifications dated November 30, 1953 and Bidding Documents ready for distribution December 8, 1953.
Bids to be opened 2:15 P.M. (P.S.T.) January 12, 1954.

For further information regarding bidding Telephone ANgelus 2-2121, Extension 55.

Bids: January 8, 1954

State Highway Construction

Sealed bids will be received by the State of Tennessee Department of Highways and Public Works at their Offices in the Cotton States Building, Nashville, Tennessee, until 10:00 o'clock A.M. January 8, 1954.

DAVIDSON COUNTY:

Project No. U-068-1-(1) Pt. III—The Construction of the superstructure for Victory Memorial Bridge over Cumberland River in Nashville, State Route No. 26.
Project Length—0.349 Miles
Working Days—250
(Unloading Point—Nashville)

Financial Equipment and Experience Questionnaires must be on file with the Department fifteen (15) days before the date of the letting.

No Proposals will be issued after 9:00 o'clock A.M. Friday, Jan. 8, 1954.

THE ATTENTION OF THE BIDDER IS DIRECTED TO CHAPTER 135, ACTS OF 1945.

Contractor must prequalify with the Department of Highways and Public Works in accordance with Chapter 80 of the Public Acts of 1929, before any proposals will be furnished. PROSPECTIVE BIDDERS MUST HAVE FILED THEIR QUESTIONNAIRES FOR QUALIFICATION FIFTEEN DAYS BEFORE THE DATE OF LETTING.

QUESTIONNAIRES WITHIN ONE YEAR OF JULY 1, 1953 OR LATER, WILL BE REQUIRED OF ALL PROSPECTIVE BIDDERS IN THIS LETTING.

Must be certified by a certified public accountant.

The right to reject any and all bids is reserved.

W. H. Leech
Commissioner

OFFICIAL PROPOSALS

Bids: December 29, 1953

Medical Building

THE PORT OF NEW YORK AUTHORITY
LINCOLN TUNNEL
CONTRACT LT-160.044

Sealed proposals for the construction of a medical building in the vicinity of the New Jersey Shaft of the Third Tube of the Lincoln Tunnel will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1111, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, December 29, 1953, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1111, and copies will be furnished upon deposit of $25.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

Bids: December 22, 1953

Alterations to Abutments on Dyer Avenue

THE PORT OF NEW YORK AUTHORITY
LINCOLN TUNNEL
CONTRACT LT-110.011

Sealed proposals for alterations to abutments on the Dyer Avenue approaches to the Lincoln Tunnel will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1111, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, December 22, 1953, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1111, and copies will be furnished upon deposit of $25.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, December 10, 1953

OFFICIAL PROPOSAL ADVERTISERS

PLEASE TAKE NOTE

HOLIDAY CLOSING DATES

Dec. 24 issue closes Dec. 17

Dec. 31 issue closes Dec. 24 (10 A.M.)

Jan. 7 issue closes Dec. 31 (10 A.M.)

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P-9978, Engineering News-Record
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P-1005, Engineering News-Record
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WANTED—BUILDING Construction Estimator —By old established North Jersey Company —Must be experienced with emphasis on Industrial Construction. Must have engineering background and be able to handle the complete estimate. Excellent Salary — Profit Sharing — Opportunity to advance — Age 32-42. P-9232, Engineering News-Record.

ESTIMATOR WANTED: Permanent position with office of unequalled reputation in construction cost estimating. Applicant must be willing to learn and work to our standards of accuracy and thoroughness in quantity takeoff. Pleasant location in Central New England. Write, giving experience, education, etc. Dingman, P. O. Box 591, Palmer, Massachusetts.

ENGINEERS, EXPERIENCED in design of sewers, sewage treatment plants, water works, also Architects and Architectural Draftsmen. Reply, stating education, experience, salary requirements and when available. P-9936, Engineering News-Record.

ESTIMATOR—PRINCIPAL duties Quantity Take-off. Experienced on Public Works, Institutional, Educational and Industrial Buildings. Bridges and related construction. Permanent position, excellent salary. Location, Maryland, state education, experience, age, references and availability. P-9854, Engineering News-Record.

OFFICE PROJECT Engineer 30-40 for contractor specializing in competitive bidding public buildings. Position requires job expediting, purchasing, and checking details. Graduate engineer or architect preferred. Stanley W. Newman Co., Mobile, Alabama.

POSITIONS VACANT

WANTED TUNNEL superintendent experienced in rock and soft ground with tunnel following. State experience, age, reference and type of contract desired. P-9915, Engineering News-Record.

CHIEF ENGINEER with engineering company specializing in chemical plant design. This position requires a man with experience directing the design work of others including project engineers. This is a permanent position with a growing organization. Send complete resume of education and experience to P-9870, Engineering News-Record.

SALES ENGINEER to obtain contracts for engineering services. Contact work will be with industries in the Southwest and headquarters will be Atlanta. We require a man who has actual experience selling engineering services and can show results. Send complete information to P-9871, Engineering News-Record.

ESTIMATOR, EXPERIENCED in quantity take-off, determination of unit prices and preparation of complete estimates on building construction and mechanical installations. Work is located in the Southeast. Good pay in permanent position for right man. P-9872, Engineering News-Record.

CIVIL ENGINEER—General Municipal Technical and Administrative Duties $350 to $400 per month, commensurate with experience. Must be registered or eligible for registration in Wisconsin. Give full particulars in first letter. P-9934, Engineering News-Record.

STRUCTURAL STEEL detailers wanted: experienced: employee benefits, good pay. Five day week. Southern Engineering Company, P. O. Box #1087, Charlotte 1, N. C.

MAP DRAFTSMAN—Experienced in making land maps and survey calculations. Wanted for work in Land-Drafting Division of large industrial corporation in deep south. Excellent climate and living conditions. Write, giving full personal data, Box P-9969, Engineering News-Record.

ENGINEER—SUPERINTENDENTS with well established firm of engineering contractors to supervise construction and operation of industrial furnace and incinerator plants. Require knowledge of general building construction, mechanical equipment and refractory work. Age under 45. Engineering degree not essential. Must travel extensively in U. S. Write full particulars including experience, education, availability, personal details and salary requirements. P-9967, Engineering News-Record.

RESIDENT ENGINEER Inspector wanted: Sewage Commission of Salisbury, Maryland desires qualified person immediately to inspect pipe lines, structures, and mechanical equipment on sewerage construction project of approximately nine months duration. Write full particulars promptly, including age, experience on similar projects, references, availability, and salary desired to Gardner & Sterling, Consulting Engineers, P. O. Box 74, Salisbury, Maryland.

SALES ENGINEER: Young, civil, mechanical or chemical engineer to be assistant to Department Manager in Public Works field. Duties involve some travel calling on Engineers, Officials. P-9981, Engineering News-Record.

NATIONAL MANUFACTURER of structural sheet steel and aluminum has excellent opportunity for an aggressive, sales-minded engineering or architecturally trained man as sales engineer. Degree not necessary. Must be willing to travel. Desired age, 25-35. Salary and bonus. P-9980, Engineering News-Record.

WANTED EXPERIENCED estimator, engineering background preferred. Must have thorough knowledge of roads, drainage and sewers. Position with small progressive general construction firm. Work in New Jersey Metropolitan area. Salary open. P-9894, Engineering News-Record.

(Continued on the following page)

POSITIONS VACANT
(Continued from preceding page)

WANTED: GENERAL Superintendent—Engineering background—Knows estimating—Field experience—with a fast growing concern in the New Jersey area doing Gas, Water and Telephone Work. P-9982, Engineering News-Record.

SELLING OPPORTUNITIES OFFERED

SALES ENGINEERS—Albany, New York and Pittsburgh, Pennsylvania with established national concern selling prefabricated metal products to engineering and construction markets. Position offered is permanent and presents excellent future with aggressive, progressive and expanding organization. Engineering degree desirable. Previous sales experience unnecessary. Age 24 to 30. SW-8254, Engineering News-Record.

SALES AGENCY offered to man now contacting architects and industrials for product specifications. This proven item in the construction line now successfully handled as sideline by such persons. $250,000 yearly potential in industrial areas. Straight 5% commission with complete protection. Liberal manufacturer aid via published advertising and direct mail. Many choice territories still available. RW-8736, Engineering News-Record.

ESTABLISHED MANUFACTURERS' Sales Representatives wanted by reputable manufacturer whose patented product is used in construction of sewage disposal plants, waterworks, pumping stations, industrial plants, etc. Territory open—Chicago, Ill., Cincinnati, Ohio, and St. Louis, Mo. areas. RW-9950, Engineering News-Record.

EMPLOYMENT SERVICE

SALARIED PERSONNEL, $3,000-$25,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

POSITIONS WANTED

DESIGN ENGINEER, 22 yrs. varied experience on large irrigation works (18 yrs. with U. S. Bur. of Recl.). Experience includes extensive hydraulic and concrete design; cost and quantity estimates; preparation of cost and progress reports; material expediting; training and supervising men in this work. Two years as Chief Design Engineer for multimillion dollar project in South America. Detailed experience record upon request. PW-9751, Engineering News-Record.

SUCCESSFUL CONSTRUCTION man, age 40, is interested in relieving you of most or all of your construction problems on grading, paving, drainage on highways, airdromes, floodwalls, etc. as top level supervisor. Reply PW-9750, Engineering News-Record.

ESTIMATOR, GRADUATE Architectural Engineer age 29, now employed, experienced in takeoff, pricing, complete preparation of estimates for commercial and industrial work. Prefer position in Chicago area. PW-9921, Engineering News-Record.

ENGINEER: B.S. in C.E., 32, married, 10 years in supervision of construction, estimating, and design. Aggressive and loyal. Foreign service preferred, but not stipulated. Available 1 January 1954, sooner if necessary. Present salary $10,000. H. E. Rose, 1706 North 16th Street, Terre Haute, Indiana.

FIELD OFFICE Manager, heavy construction. PW-9937, Engineering News-Record.

CIVIL ENGINEER 26, 3 years experience on bridge and underpass work as contractor's engineer, 2 years as U. S. Army officer in charge of construction desires position with contractor or consultant in Southern New England or Eastern New York State. Available early '54. PW-9930, Engineering News-Record.

STRUCTURAL ENGINEER, licensed graduate, 28 years office and field, industrial buildings, chemical plants, waterfronts, underground structures, etc., available for permanent responsible position. PW-9195, Engineering News-Record.

CONSTRUCTION ENGINEER—C.E. graduate. Age 53, twenty-five years successful experience all phases large scale general construction and industrial chemical in direct supervision both in Field and Office. Top References. PW-9855, Engineering News-Record.

GENERAL SUPERINTENDENT — Now residing in Canada. Available on or about Dec. 10th '53. Proven record. Industrial and commercial buildings & heavy foundations, sound knowledge coordination of Sub Trade. Cost conscious. Best of references. PW-9895, Engineering News-Record.

POSITIONS WANTED

MECHANICAL ENGINEER desires foreign employment in Europe or Latin America. Age 35, married, one child. Previous Latin American experience. Spanish speaking. Over 15 years heavy experience in power, mining, construction, inspection. Presently employed by large Southwestern construction firm but available on short notice. Excellent references. Inquiries invited. PW-9747, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT — 20 years experience power plants, pulp mills, sewage disposal and heavy foundation work. Desire locate in Florida or southeast U.S. Available immediately. PW-9989, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT: concrete pipe manufacture. Considerable experience. PW-9974, Engineering News-Record.

CIVIL ENGINEER — 29, family 3½ yrs, varied experience, desires field position in N.Y.C. area. PW-9942, Engineering News-Record.

REGISTERED CIVIL Engineer, 39, desires city engineer position of small municipality anywhere in nation. Seventeen years heavy experience in design, specifications, contracts, performance of contracts and maintenance of public works. PW-9958, Engineering News-Record.

POSITIONS WANTED, foreign, sheet metal. Qualified in air-conditioning, ventilation, welding. 15 years experience. Last employment superintendent on foreign job. Age 35. PW-9965, Engineering News-Record.

EXPERIENCED YOUNG estimator and assistant superintendent on buildings, bridges, and structures, desires permanent position Mid-West or West. Engineering and business training. Family man. PW-9964, Engineering News-Record.

CIVIL ENGINEER, 27 Single, BSCE, 1½ years experience field engineer earthwork, survey, reinforced concrete, and materials. Desires position with construction firm or enginering firm in northern midwest, northwest, or Pacific coast. Available 30 days. PW-9947, Engineering News-Record.

CONSTRUCTION EXECUTIVE — estimating, purchasing and general coordinating. Twenty five years experience on all types of projects. Desire change to position that offers possibilities for the future. PW-9949, Engineering News-Record.

CIVIL ENGINEER MIT graduate, B.S., M.S., P.E. in N.Y. 8 years experience in consulting, teaching, structural and municipal engineering. Desire position requiring analytical mind, strong theoretical background, ability to organize work of others and see job thru from beginning to end. Presently in charge of small engineering department. Willing to invest. PW-9960, Engineering News-Record.

MATERIALS ENGINEER with 20+ years in steel, concrete, asphalt, soils, welding. Competent administrator. Seeks broader responsibilities in industry or consulting. Reply PW-1008, Engineering News-Record.

EXPERIENCED BOOKKEEPER and Cost Accountant desires position in Latin Countries. Over 45 and had experience in Central America. Reasonable Spanish but not fluent. Sober and steady worker. PW-9983, Engineering News-Record.

PROJECT MANAGER — 20 years experience steam and hydro plants, heavy industrial work, foundations. Will accept either foreign or domestic. Available immediately. PW-9988, Engineering News-Record.

BUILDING CONSTRUCTION Estimator — industrial, commercial, public. Available 30 days notice. PW-1012, Engineering News-Record.

SELLING OPPORTUNITY WANTED

SALES EXECUTIVE 20 years experience wishes to represent manufacturer in Eastern States on basis of drawing account aaginst commission. Firm must be A-1. For references & particulars write box RA-9952, Engineering News-Record.

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Wanted to Buy Surveying and Mapping business. Reply Box BO-9923, Engineering News-Record.

WANTED — PERMANENT connection with Southern Calif. General Contractor. Am interested as partner or will consider employment as estimator or general superintendent in office or field with opportunity to purchase part interest after trial period. Fifteen years experience on industrial, commercial and public buildings, last seven in business for myself. Prefer medium size contractor. BO-1023, Engineering News-Record.

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WANTED TO BUY
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1—P & H Model 655B Crawler Crane, 1½ yd. capacity. Late model. Cat. Diesel.

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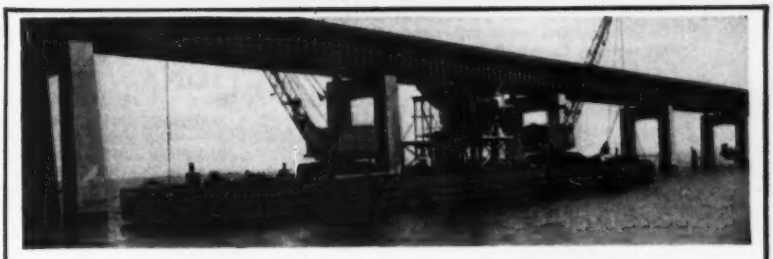

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Model 38-B, S/N 38B-79079, 20' Boom, 17'5" Handle, 1½ Yd Dipper, D-13000 Diesel Motor with gas starter engine, run 2730 hours, Power Boom Hoist, 45' Crane Boom with 20' insert, Fairlead, 2500# Counterweight. Crane Boom, Counterweight and Fairlead never used. Caterpillar Mounting, length 13'7", width 10'6", Treads 33'. New Nov. 1950, seen light service.

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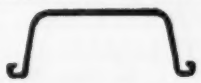

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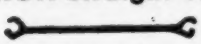

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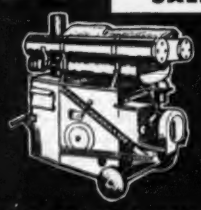

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Redesigned DC welder guards against short outs

Westinghouse has redesigned its selenium rectifier DC are welder to make it smaller and lighter without reducing capacities. Further, it is reported that the new welder incorporates added convenience to operators in the form of overload protection, elimination of short outs during short-arc welding operations and further ease in using multiple units.

Consisting essentially of two parts, the heart of the new welder is made up of a three-phase, full-wave selenium rectifier and a Transactor—a three-phase transformer and movable core reactor. Lightness is achieved by constructing Transactor unit coils of aluminum with a weight saving of about 50 percent when compared with the copper type.

Although the use of aluminum in the coils has been a major contribution to the substantial size and weight reduction—510 lb to 400 lb on a 300-amp welder—design modifications have also helped. These modifications have also resulted in simplified construction and better ventilation.

Ventilating air is drawn in at the bottom of the welder, moved vertically through the unit and exhausted through openings at the top of the case. This upward flow of air follows natural convection and is said to result in maximum cooling with minimum size cooling fan and motor.

To protect the unit again excessive overloading the new welder is equipped with a manually operated, shunt trip, di-ion circuit breaker connected to the primary leads. When the welder overheats a thermostatic unit activates the shunt trip mechanisk causing the circuit breaker to open, shutting off the welder. When the temperature returns to a safe value the circuit breaker may be closed and reset manually.

A control feature, the Arc Drive Control, has been designed to eliminate shorting out during short arc operations. Essentially, it permits independent control of the dynamic and static characteristics of the welder by varying the ratio of short-circuit current to welding current. When the arc begins to short out, the Arc Drive Control supplies instantaneous current surges of variable amounts, depending on the requirements. The surges clear the shorts and re-establish the welding arc.

The new welder is available in three standard sizes—200, 300 and 400 amp; however Duplex models are available in 300/600- and 400/800 amp ratings. WESTINGHOUSE ELECTRIC CORP., 401 LIBERTY AVE., BOX 2278, PITTSBURGH 30, PENNA.

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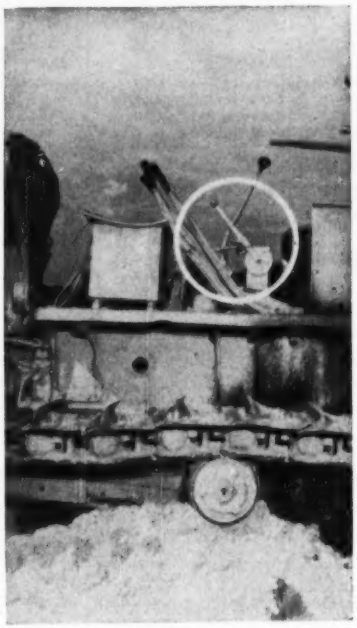
A new throttle control is said to hold engine speed constant and thereby improve engine performance despite heavy shocks or vibrations that might be encountered. The control stays put in any position with any governor pull up to 75 lb.



THROTTLE CONTROL (circle) resists vibrational displacement.

Of the friction type, the control has been designed to provide an infinite range of speeds (within engine design ranges) for construction equipment engines. Speed changes are reportedly fast, positive and effortless.

The control can be mounted in the field on all standard types and sizes of engine. It is pointed out that the elimination of ratchets and pawls together with a sharply reduced number of moving parts cuts wear considerably. LINK-BELT SPEEDER CORP., 1201 6TH ST., S.W., CEDAR RAPIDS, IOWA.

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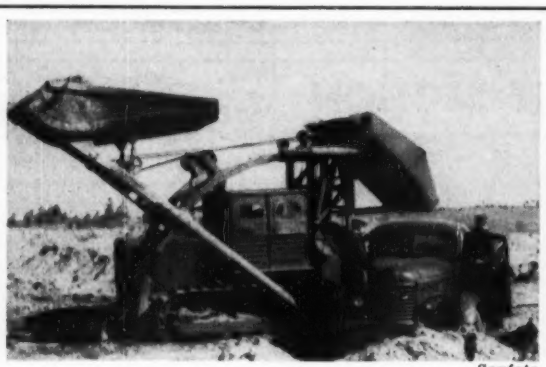
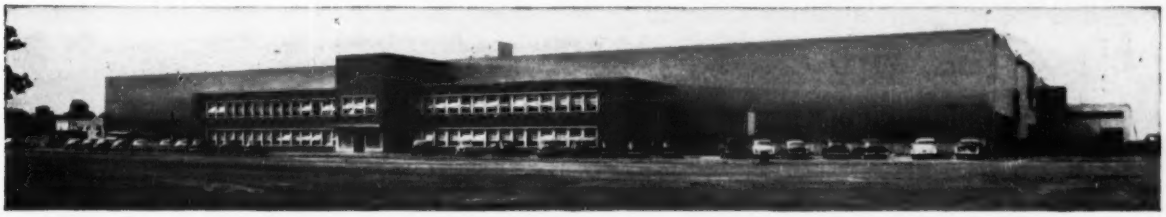


Sovfoto

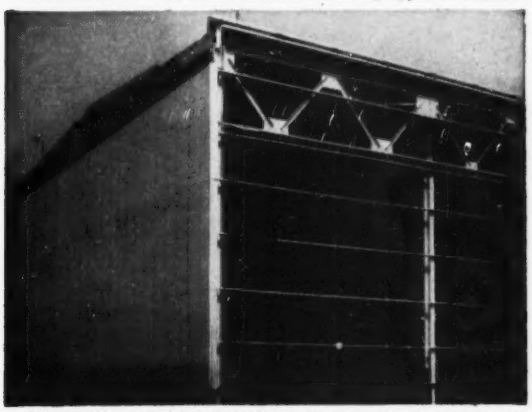
FROM BEHIND THE IRON CURTAIN comes the picture of a Russian-built overhead loader (left) at work in the construction of a hydroelectric station at Kuibyshev (U.S.S.R.). At right, a 3.7-cu yd. Model 8H Athey Mobiloader—any resemblance etc., etc.

SHEETS OF STAINLESS STEEL enclose the 34 to 36 foot walls of the new plant of United States Steel Homes, Inc. near Harrisburg, Pa. Stainless sheets were fabricated and erected by American Bridge Division of United States Steel Corporation, and the general contractor was Ritter Brothers, Harrisburg.



Walls of Stainless Steel will keep maintenance costs low in this new plant of United States Steel Homes, Inc.

HERE WORKMEN are bolting the 30" corrugated Stainless Steel sheets to the structural steel frame. Erection is fast and simple; it requires a minimum crew and can be carried out in any type of weather.



THIS VIEW shows Stainless Steel sheets attached to the structural steel framework of the plant. All flashing and trim is Stainless Steel, too.

HERE is one of the largest industrial structures to emerge from the growing trend toward use of Stainless Steel for exterior walls. It's the new plant of United States Steel Homes, Inc.—formerly Gunnison Homes, Inc.—located near Harrisburg, Pa.

The plant is an "L"-shaped structure with approximately 310,000 square feet of floor space. The entire exterior is covered with sheets of 26-gage corrugated Stainless Steel, used in 30" widths. Approximately 55 tons of Stainless Steel were used.

Reduction of maintenance costs was the primary reason for selection of Stainless Steel sheets. The walls will not require painting and a long, trouble-free life is anticipated. And, in addition, Stainless Steel gives the plant an attractive over-all appearance.

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Model R-140-4x4 has a gross vehicle weight rating of 11,000 lb. in 130- or 142-in. wheelbases. Power is supplied by a 100-hp engine delivering maximum torque at 2,000 rpm.

Model R-160-4x4 has a GVW rating of 15,000 lb. in 154 and 172-

BUILT TO WORK with Caterpillar DW 20 tractors, the Easton Model TD-1832H side-dump trailers have a capacity of 32 tons. Big single tires and outboard-mounted hydraulic jacks are said to assure lateral stability even while dumping on the run. Maximum dumping angle is 50 deg but bottom-hinged door becomes flush with the floor at 20 deg to discharge load clear of running gear. Full description in Bulletins 7-A1 and 9-A7. Easton Car & Construction Co., Easton, Pa.

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and YEARS from NOW

Satisfaction

When you specify Universal Vitrified or U. S. Concrete Pipe you can be sure of three things.

First, highest product quality and dependability.

Second, prompt delivery. Strategic location of our eight plants permits prompt shipment and keeps freight costs down.

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These factors add up to permanent satisfaction . . . for you — and for those who rely on your judgment.

Westinghouse Electric Corp.
Underground Waste Piping System, Mansfield, Ohio
6" and 8" extra strength vitrified pipe with Tylox Neoprene Rubber Gaskets

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PRODUCTS

Sewer Pipe (Vitrified)	Slipseal Sewer Joint	Flue Lining
Sewer Pipe (Concrete)	Segment Sewer Block	Stove Pipe
Vitrified Liner Plates	Meter Boxes	Chimney Tops
Tylox Flexible Rubber Coupled Vitrified Pipe	Ship Lap Wall Coping	Chimney Pots
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what's NEW in Engineering

Laboratory facilities for engineering research are available to individuals and groups with worthwhile projects at Richmond Engineering Field Station, administered by Department of Engineering, University of California. Charges are based on actual expenditures with appropriate overhead. For information, write Institute of Engineering Research, University of California, Berkeley.

Rebuilding a near-ghost mine at Sunnyside, Utah, for greater coking-coal production with higher efficiency, is a current major project of Kaiser Engineers. The original Sunnyside mines, opened in 1896, were in bad condition. The problem was to rehabilitate and expand two existing

mines and open a third to raise coking-coal production from 1,000,000 to 1,715,000 tons per year. We'll send you a reprint of an article by Wesley Hyatt and R. G. Heers in *Coal Age* which tells the full story of Sunnyside's emergence from a "near-ghost" to one of the most efficient and modern coal producers in the West.

A $50,000 bonus goes to the first person to bring in a Tennessee oil well that will produce 50 barrels a day for six months, according to a new state law. Only 35 wells are now producing in Tennessee, but geologists think the State has rich oil possibilities.

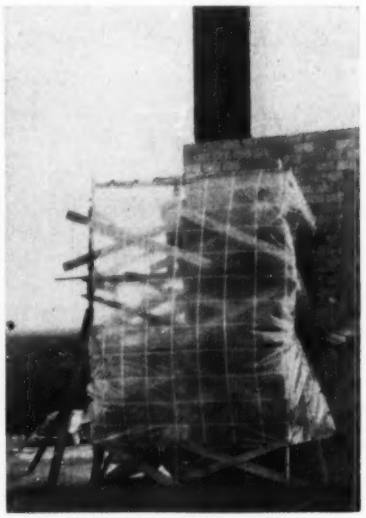
When it comes to research, preliminary engineering studies, engineering design and layout, estimating, preparation of specifications, construction programing, negotiation of contracts, and procurement and expediting of materials and equipment—call or write: Kaiser Engineers Division of Henry J. Kaiser Company, Kaiser Building, Oakland 12, California.

in. wheelbases. Its 108-hp engine offers maximum torque when turning at 1,400 rpm.

Front and rear axles on both models are single reduction hypoid bevel gear type. Transfer case in both has 1:1:1.87 gear ratios providing, in combination with four-speed transmissions, eight forward and two reverse speeds. The transfer case is designed for the mounting of a full-torque power take-off at the rear of the input shaft.

On both trucks the standard transmission is a sliding gear selective type with power take-off mountings on right and left side to handle the optional front-mounted winch. Optional transmission is a four-speed syncromesh type equipped with one power take-off.

Standard tires for the larger model are 7.50x20 eight-ply front and dual rear; 8.25x20 front and dual rear tires are optional. The smaller model mounts a standard arrangement of single 7.50x17 eight-plies front and rear; duals in this size are also available. For greater traction 8.25x17 tires single or dual rear, and 9.00x18 singles can also be obtained. INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO 1, ILL.



Light plastic windbreak eases working conditions

A light weight, transparent windbreak has been designed to expedite construction in bad weather and improve outdoor working conditions throughout the winter months.

Made of polyethylene plastic, the tarpaulins are said to be strong and durable yet light enough to be easily

FLEXIBLE POWER TAKE-OFF SHAFT acts as a quick-disconnect coupling and provides for change in length of the drive when the tractor-trailer is jackknifed. The drive consists of a 1¼-in. flexible shaft in combination with a square telescopic rod and tube. A universal joint is used between the telescopic rod and the trailer hoist pump to prevent the shaft from being bent too severely. Main advantages of the system is the elimination of complex gearing arrangements. Stow Mfg. Co., 19 Shear St., Binghamton, N. Y.

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VERTICAL HORIZONTAL

END SUCTION PUMPS—The Peerless "Fluidyne" line. Economical face mount and flexible coupled pumps for widest variety of water handling services. ¼ to 150 hp available. Efficient, easily serviced.

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MIXED FLOW AND PROPELLER PUMPS—Giants in the world of pumping. For high capacities, low head. Single and multi-stage types for all water services. Also widely applied to flood control and drainage pumping. Capacities to 220,000 gpm.

VERTICAL TURBINE TYPE PUMPS—Electric and engine driven pumps for primary water supply from deep or shallow drilled wells. America's sales leader. All sizes, capacities and hp.

TYPE TU—MULTI-STAGE PUMP—For high pressure pumping. 2, 3, 4 and 5-stage pumps available. Horizontal split case design. For capacities up to 3500 gpm; heads to 1600 feet.

VERTICAL ENCASED CENTRIFUGAL PUMP—The Peerless "Hydro-Line." For heavy duty condensate return service. Rugged, dependable, versatile, vertical design.

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- ☐ FLUIDYNE END SUCTION PUMPS Bulletin B-2300
- ☐ TYPE A ALL PURPOSE PUMP Bulletin B-1300
- ☐ WATER SUPPLY PUMPS Bulletin B-141

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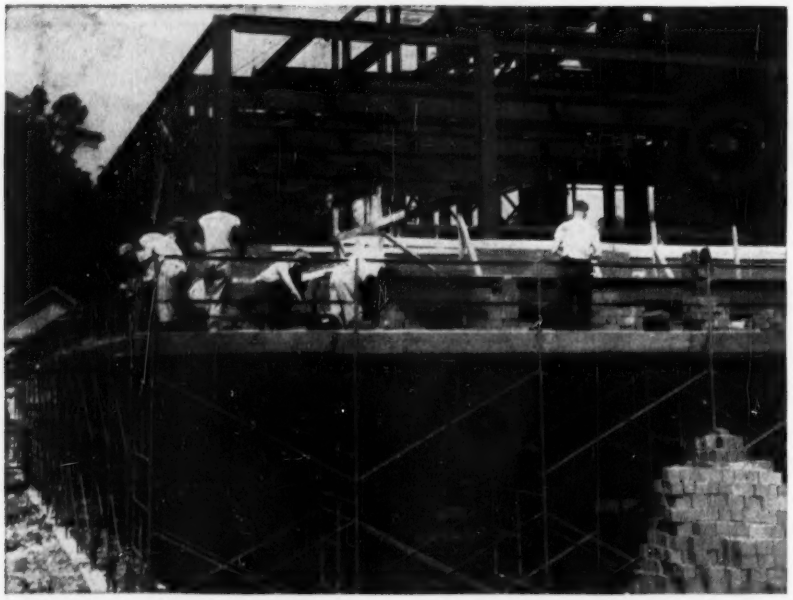
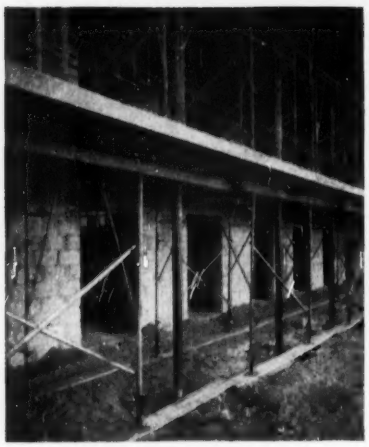
ENR

"TROUBLE SAVER"® Sectional Scaffolding at Work Around the U. S.



NEW YORK MASONS

work on new power plant building at the State Hospital in Middletown, N. Y. L. B. Strandberg and Sons Co., Inc., Chicago general contractor, purchased the "Trouble Saver" Sectional Steel Scaffolding used on this job. The 5-ft high mason-type frames shown here in use are designed to provide a convenient, multi-level scaffold with a maximum number of sidewall bracket positions for masons' use. "Trouble Saver" Scaffolding, described in free Bulletin PSS-24, is one of the many types of scaffolding offered by PS Co.—the only complete line for every job, big or small. Be sure of the right equipment for your job — follow the practice of experienced contractors and—*when it comes to scaffolding, come to PS.*

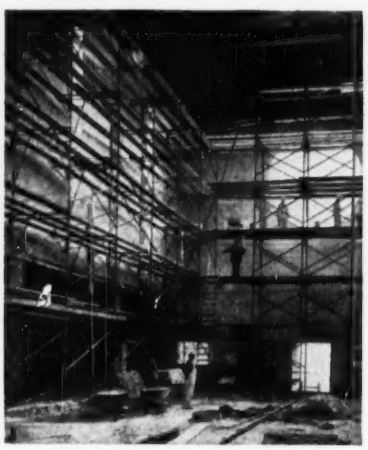


MIAMI SHORES—

For the Blue Horizon Hotel's new cabanas, Florida contractor Morris Burk cut concrete shoring costs by using "Trouble Saver" Sectional Scaffolding and I-beams set directly on scaffolding frames. Plywood panels were laid on I-beams without fastening. The new technique eliminates framing, also ends stripping. "Trouble Saver" Scaffold used: 52 5x5-ft deep-trussed end frames, 20 6½-ft shallow-trussed end frames, 72 6½-ft deep-trussed end frames, 288 plain bases, 288 20-in. adjustable extension legs; 120 5-in. I-beams.

RENOVATION IN ILLINOIS—

Removal of old cornices, installation of new stone copings and a new synthetic granite front, replacing of windows and painting the upper floors of the 8-story building at 12-22 North Michigan Ave., Chicago, required this big "Trouble Saver" Scaffold. To erect the 92-ft high scaffold, The Patent Scaffolding Co.'s Chicago office supplied 315 pre-fabricated scaffold frames to Enjay Construction Company. Here workmen are removing the old cornice preparatory to installing a simple stone coping.



PORTLAND PLASTER

contractors Cann & Gray rented this five-level "Trouble Saver" Sectional Steel Scaffolding structure to safely speed plastering of a new church at S. E. 18th and Division Streets in Portland, Ore. This "Trouble Saver" assembly employed shallow-trussed end frames, 6½ ft high, giving workmen ample headroom when walking along the scaffold platforms. Also note the "Trouble Saver" Scaffolding sidewall brackets, employed here for extra platform working area for plasterers.

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To help you solve any scaffolding problem, PS offers a complete nation-wide engineering service—available locally. See the Yellow Pages in your 'phone book for the nearest Patent Scaffolding office or representative handling "Gold Medal" Scaffolds.

handled. They are also reported to remain flexible even in temperatures down to 78 below zero.

The windbreaks are reinforced at 12-in. intervals with fiber glass and the reinforced edges are grommetted every 18 in. to facilitate fastening to scaffolding or other supports. A large variety of sizes are available. PLASTICS DIV., CANTON CONTAINERS, INC., CANTON 7, OHIO.

Conveyor-borne material weighed in transit

For the continuous weighing of a steady flow of loose materials carried by a belt conveyor, the Belt-Meter system provides a dial and chart record of the weight of material carried at any instant as well as a counter reading of the accumulated tonnage. When used to convey aggregates or cement, the meter affords opportunities for a high degree of proportioning control.

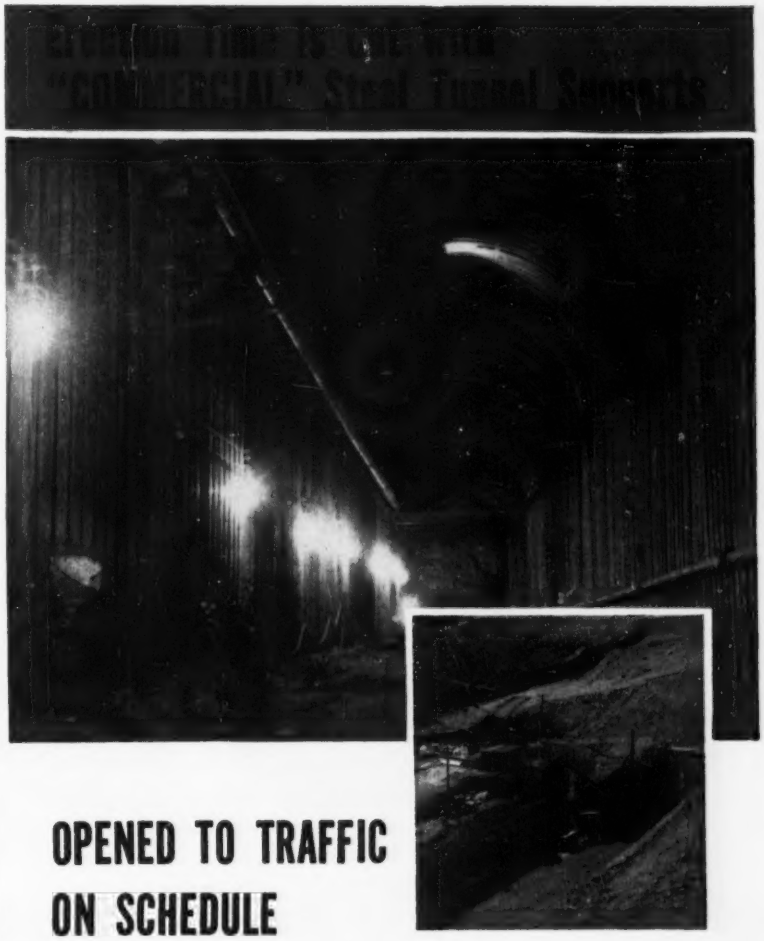
Basically, the Belt-Meter measures the weight of material on a short section of belt and the belt speed and multiplies these two variables to obtain the pounds per hour being delivered. If the material handled is of a sticky nature and adheres to the belt surface, a tare scale can be provided to subtract this material continuously from the gross weight.

The meter is easily adaptable to control, ratio and signaling applications. If supplied with control, the instrument can be equipped with a preset counter to shut down the belt when the predetermined weight of material has been delivered. Further information is contained in Instrumentation Data Sheet 10.18-3. MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., STATION 64, WAYNE & WINDRIM AVE., PHILADELPHIA 44, PENNA.

Wallboard strength increased with glass fibers

Up to 80 per cent greater shock resistance is reported for Certain-teed's Bestwall gypsum wallboard through the substitution of glass fibers for cellulose. According to the manufacturer, the fibers of glass hold the gypsum core together more cohesively and increase the wallboard's resilience. Reportedly, the reinforcement has reduced the incidence of damage in shipment, application and service.

It was pointed out, however, that the added strength has not impaired the product's workability. The new Bestwall line is available in standard ¼, ⅜ and ½-in. thicknesses. CERTAIN-TEED PRODUCTS CORP., AKRON, N. Y.



OPENED TO TRAFFIC ON SCHEDULE

You can see how close to the heading these "COMMERCIAL" steel tunnel supports are set into place. Because they are accurately and completely fabricated they are placed at the design line and quickly bolted into a lining which can add structural strength to the permanent lining. Steel supports have smaller cross section than timber sets and can be incorporated in the concrete lined area. Substantial savings in tunnel excavation and concrete lining will result when steel tunnel supports are installed. "COMMERCIAL" prefabricated steel tunnel supports offer many other advantages which will assist you in realizing substantial savings and accelerated progress reports. Transition to steel supports before your heading is started is much less costly.

THE COMMERCIAL SHEARING AND STAMPING COMPANY
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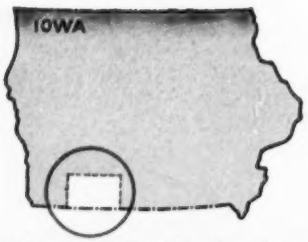
Taking Iowa



RINGGOLD COUNTY has 935 miles of county roads. This is the location of farm to market road construction done by the International Crawler fleet of Easter & Schroeder, Inc.

"IDEAL FOR FARM-TO-MARKET ROAD CONSTRUCTION," say Joe Easter and Don Schroeder (above). "In our eight month's working season, our five TD-18A units, with the sixth as a pusher, moved approximately 540,000 cubic yards, with minimum downtime."

ROAD BUILDING PRODUCTION LINE! Part of the Easter & Schroeder fleet of International crawlers on a regrading job in Ringgold County, Iowa. On this seven-mile stretch they moved 78,000 cubic yards in three weeks' time. ***"We move it that way all the time,"*** say the owners.

to Town

Farm-to-market roads get big boost fast from the International Crawler fleet of Easter & Schroeder, Inc.

The dirt flies when Easter & Schroeder, Inc., move in with their fast, powerful fleet of International crawlers . . . and Iowans can get to town and back in time to do the milking. For these Griswold, Iowa, contractors specialize in farm-to-market roads in the tall corn state.

Take the seven-mile job in Ringgold County, Iowa, you see here. In three weeks' time, Easter and Schroeder moved 78,000 cubic yards of dirt to give the road a 24-foot top on a 66-foot right of way.

Easter and Schroeder came to this Ringgold County job from one in Taylor County, where they moved 35,000 cubic yards of dirt on a two-mile stretch, completing the job in six 11-hour days.

"After 25-years' experience working in dirt, we settled on a crawler fleet one hundred per cent International," say these contractor partners. The fleet now consists of six International TD-18As with scrapers and 'dozers and a TD-14A with tamping roller.

Do you want speed and dependable economy under tough conditions? Then get in touch with your International Industrial Distributor, for all the facts on Power that Pays!

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILL.

POWER THAT PAYS

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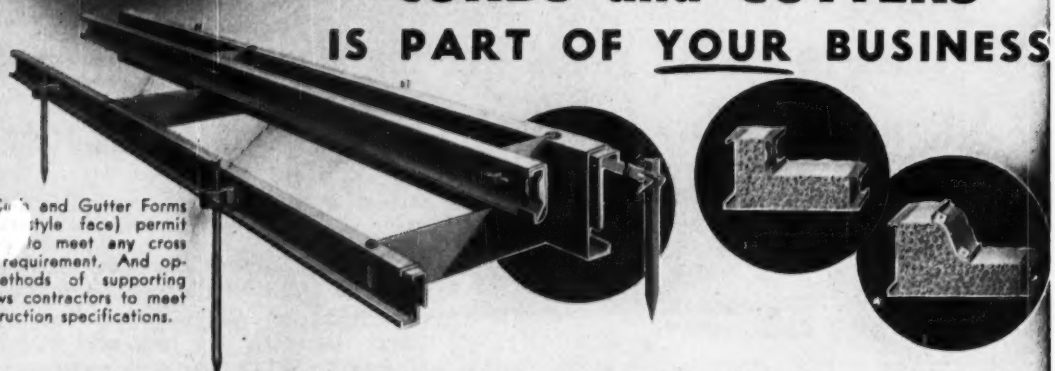
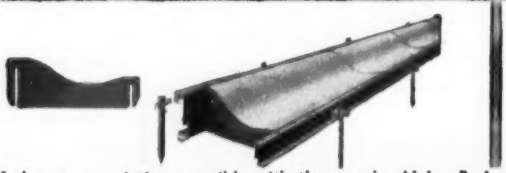
SEVEN GREAT INTERNATIONAL CRAWLERS . . . EACH WITH MATCHED EQUIPMENT FOR EVERY JOB

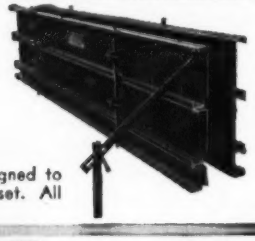
Save . . . if the CONSTRUCTION OF CURBS and GUTTERS IS PART OF YOUR BUSINESS



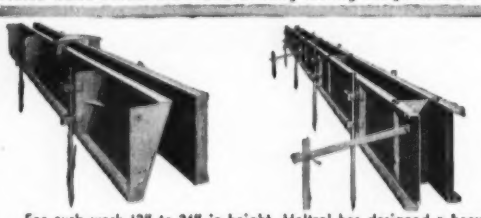
Heltzel Curb and Gutter Forms (with multi-style face) permit contractors to meet any cross sectional requirement. And optional methods of supporting face allows contractors to meet any construction specifications.

For almost 50 years Heltzel has been furnishing construction people with strong, quick-setting, fast stripping, versatile forms that make concrete forming easier, faster and less expensive.
On this page is a sampling from the world's most complete line of modern steel forms . . . designed and built by the nation's leading manufacturer of forms for concrete construction.

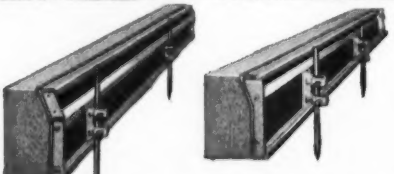




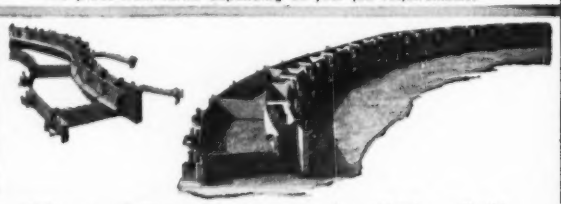
Two of the many variations possible with the popular **Helco Basic Forms.** These forms are designed to permit contractors to work an almost endless variety of curbing styles from the same basic set. All **Helco Basic Forms** are made of long lasting tough carbon manganese steel in 10' sections.



For curb work 12" to 24" in height, Heltzel has designed a **heavy duty dowel joint form** that has found ready acceptance in the field.



For partially battered curbs Heltzel can furnish either one or two piece front forms depending on your job requirements.



Heltzel builds a complete line of **Radius Forms**—either Rigid or Flexible. All forms are built to exact cross sectional specifications. Flexible Radius Forms are ideal for serpentine work for parks, etc.; Rigid Forms for repetitive curve pours where the radius is constant.

CONTRACTORS AND MUNICIPAL ENGINEERS: Today's high labor costs make the use of steel forms almost a necessity. You'll find that Heltzel can provide by far the widest variety of either standard or special forms.

If you don't already have Heltzel Form Bulletin L-20, get your copy today by writing **The Heltzel Steel Form and Iron Company, Warren, Ohio.**

—*Naturally It's A*— Heltzel — Flex-Plane — *Product*—

PUBLICATIONS

Wire rope—New wire rope recommendations for contractors' equipment have been presented in a small 20-page booklet as a guide to getting the most out of wire rope. The booklet is well illustrated and contains an explanation of wire rope construction as well as a discussion of long lay vs regular lay rope, clamshell buckets and internal lubrication. Each page shows an outline drawing to indicate the type of equipment and full recommendations are listed for each rope on the particular machine.—MACWHYTE CO., ADVERTISING DEPT., KENOSHA, WIS.

Flexible Metal Hose—Bulletin No. 15-D contains illustrations of the company's line of high pressure interlocking bronze and steel flexible hose, tar and asphalt hose, loading and unloading and necessary couplings. The bulletin lists all current applications and provides test and engineering data.—ATLANTIC METAL HOSE CO., INC., 123 W. 64TH ST., NEW YORK 23, N. Y.

Portable power tools—A new catalog describes and illustrates the company's complete line of portable power tools. It includes descriptive information and specifications on Syntron electromagnetic hammers and hammer drills, the line of portable electric drills, screwdrivers, nut runners, polishers, sanders and grinders. Information is also included on a new electric impact wrench. Similar information on the line of self-contained gasoline hammer paving breakers and rock drills together with concrete vibrators have also been included. Catalog No. 537 is available from the SYNTRON CO., 328 LEXINGTON AVE., HOMER CITY, PA.

Bolts vs. rivets—A new booklet describes the use of high-strength steel bolts instead of rivets in the assembly of the structural joints. The 18-page bulletin includes general information plus approved specifications for assembly. Booklet No. 342 is available from the BETHLEHEM STEEL CO., BETHLEHEM, PA.

Steel forms—Steel forms for building concrete curbs, curb and gutters and sidewalks are discussed in a new booklet. Interchangeable face, build-up, heavy duty, dowel, two-piece rigid radius, flexible radius, specials such as island forms are discussed and pictured. Write for Bulletin L-20.—HELTZEL STEEL FORM AND IRON CO., WARREN, OHIO.

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EDITORIALS

Less unity for engineers

THE DECISION of the directors of the National Society of Professional Engineers not to affiliate with Engineers Joint Council (ENR Dec. 3, p. 25) is a severe setback to the current movement toward greater unity in the engineering profession. Consequently, it is to be hoped that the invitation will be renewed in the near future, and that when it is, the NSPE board will consider it more realistically than the board appears to have done this year.

In fairness to the NSPE directors it should be said at the outset that the decision against joining EJC was in harmony with the basic conception of NSPE, for NSPE was set up to do most of the things that EJC is doing. But a decision to join could have been defended on the ground that it was taken as a transitional step pending the time when membership in NSPE increases to the point where that society will be much more truly representative of the engineers of this country than it is at present. Today, NSPE undertakes to speak for some 30,000 engineers, whereas EJC now speaks for 150,000.

The main argument made by the NSPE board against EJC as the central agency to speak for engineers on national matters is that EJC, being made up of representatives of the constituent societies, is too far removed from the individual, and so is not sensitive to his wishes. Effective action on national matters, the NSPE board states, can be obtained only "through an integrated three-level organization composed of individual members"—which is the way NSPE is set up.

Actually, however, NSPE members have no more voice in what it does than do members of societies represented on EJC. Take this question of NSPE joining EJC as an example. Individual members of NSPE had no more voice in the decision to reject the EJC invitation than did members of ASCE or ASME in the decision to issue the invitation.

When a profession is as large and diverse as engineering, the form of the organization set up to represent its members has little real significance. In the end, a small group of men, selected by any one of several possible methods, must act on matters that usually cannot be placed before each individual member. Consequently, the representative character of that group is more important than the method of its selection.

On that basis, there can be little doubt that at the present time, EJC is much more representative of the engineers of this country than is NSPE. Members of the joint council come from the governing boards of eight organizations covering every major field of engineering. As many members of NSPE also are members of one or more of those eight societies, it cannot claim to represent a distinct group.

A realistic approach to this situation would be for NSPE to participate fully in EJC activities on the basis that the whole question of what agency can best represent engineers nationally will be reviewed when the time comes that NSPE has a strong subsidiary state society in each state and has a numerical membership comparable with that of the five societies that set up EJC. If there is a real need for a national organization such as NSPE to coordinate the activities of state societies of professional engineers, joining EJC should not check the growth of NSPE as that step should tend to improve its service to the state societies. But if its principal function is to duplicate what EJC now is doing more effectively, then it hardly appears possible that NSPE will be strengthened by this decision of its directors to stay out of Engineers Joint Council. Meanwhile, there will be less unity in the engineering profession and more chances for internal conflict that can only harm the profession in the eyes of the general public.

Checks on toll collectors

TOLL COLLECTION EQUIPMENT for the New York Thruway (p. 37) is so complex that we are tempted to wonder whether the Thruway Authority isn't tilting with windmills. But public business being what it is, perhaps the authority cannot be too careful. Fraud—by motorists and toll-collectors—is the bugbear at which the thruway equipment levels its guns. And if these guns miss their mark only a small part of the time, those in charge of the toll facility may be damned eternally for negligence of public trust. Hence, in these days of investigations that even disinter corpses, officials appear to believe that they just can't take any chances.

So the New York Thruway Authority spends $2.5 million on toll-collection equipment, most of it to triple-check the basic operation of issuing entry tickets and collecting exit fares. These checks range from a simple axle-count by a treadle (a partial check on vehicle classification) to elaborate fixed equipment for photographing each vehicle as it passes through a toll lane.

A private owner of a toll facility might be content with the treadle count, plus statistical detection of deviations from normal traffic patterns and trends, which is a by-product of machine-accounting procedures used in turnpike ticketing systems. Such an approach probably would give him adequate, economical fraud protection. Possibly public bodies do have to go to greater lengths to check pilfering, especially when the daily collections run as high as anticipated for the thruway, but even for such agencies there must be a point where the cost of installing and servicing protective devices exceeds the probable loss through fraud.

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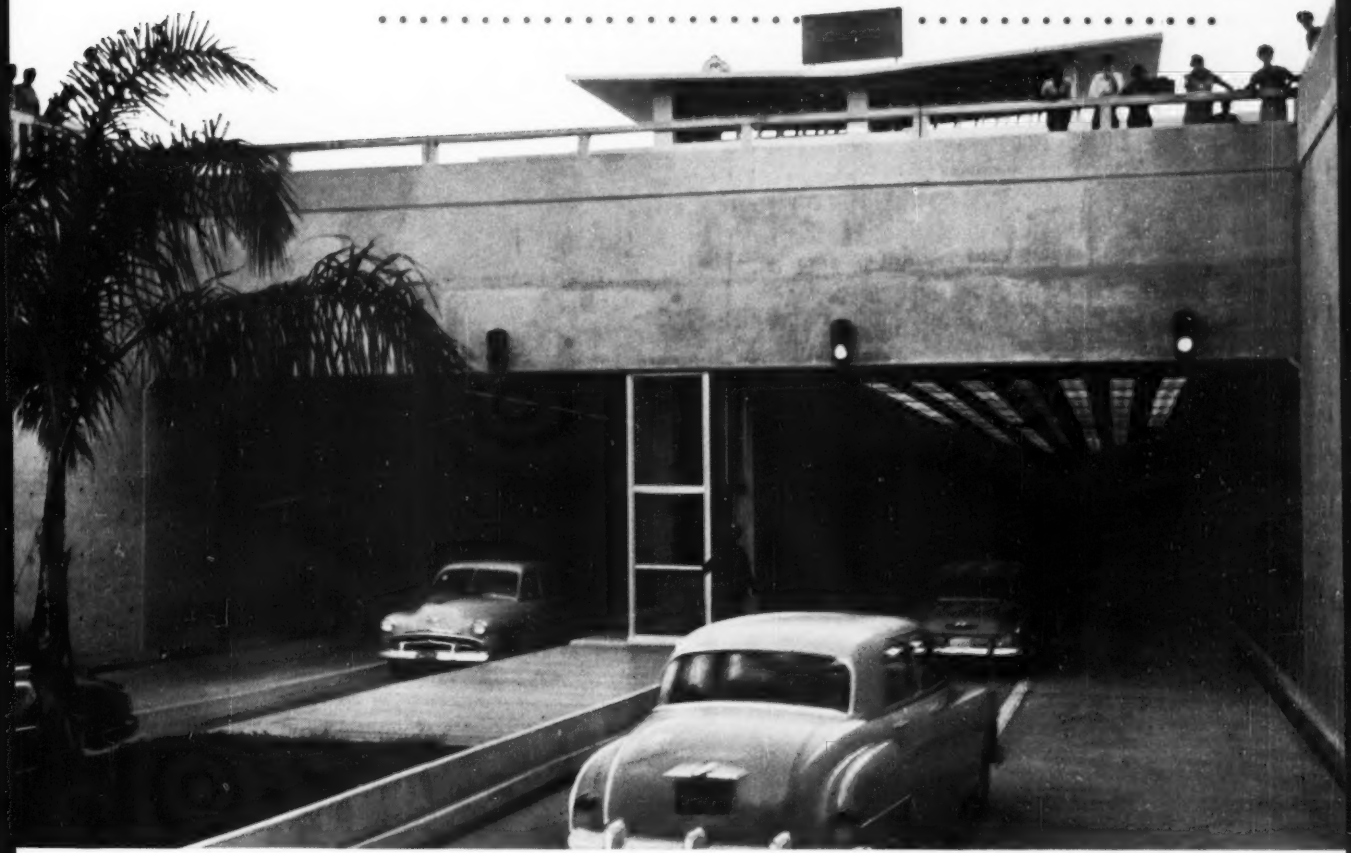

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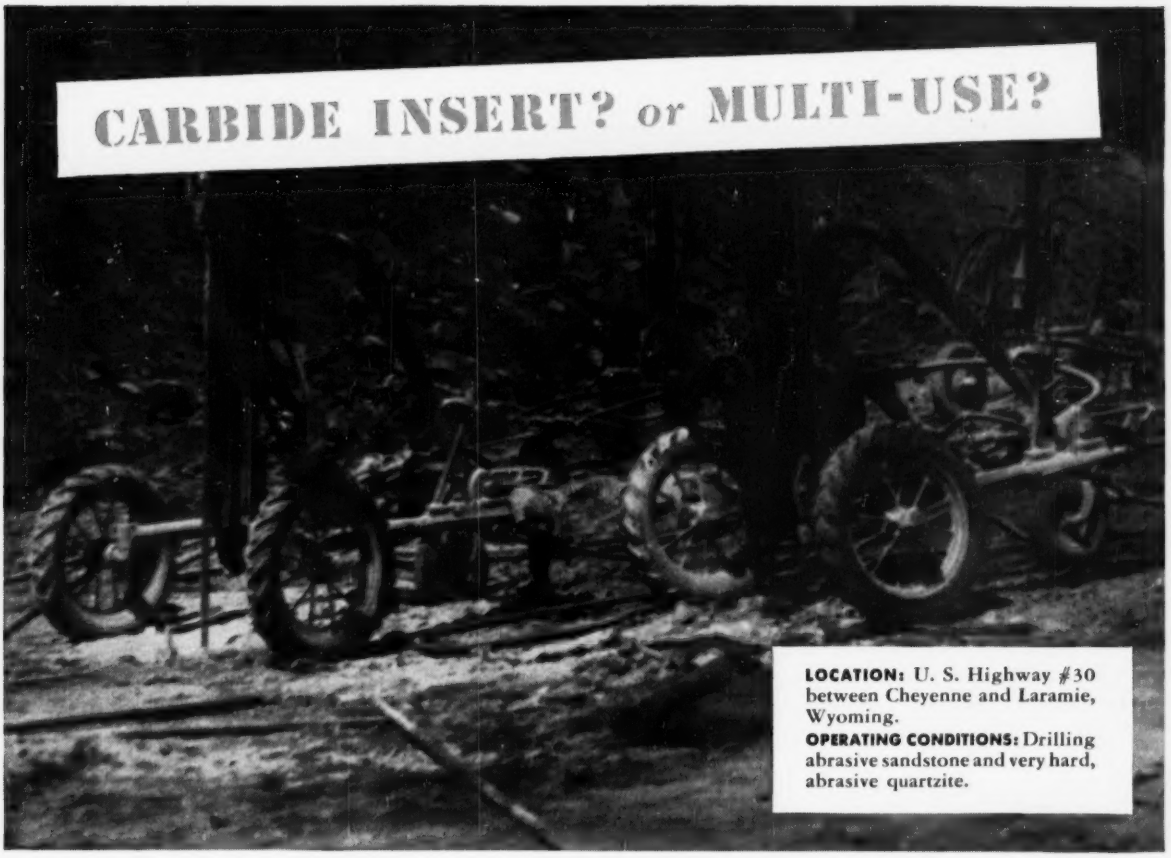
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